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REDESIGN THE BLOOD DONATION SERVICE MODEL
WHAT SHOULD THE BLOOD DONATION SERVICE BE LIKE IN THE DIGITAL AGE?

BY

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THESIS

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ABSTRACT

There is always a shortage of blood supply in the United States (U.S.). According to The American Red Cross (Blood Facts and Statistics, 2015), every two seconds someone in the U.S. needs blood, and more than 41,000 blood donations are needed every day. However, although 38% of the U.S. population is eligible to donate, less than 10% do. There are many factors that lead directly to the increase of blood demand, such as the aging population, traffic accidents, and nature disasters.

The reality that blood demand outstrips supply has led to the question of whether current blood donation service across the country is effective enough for donor recruitment. We have achieved significant scientific progress in the domain of blood donation knowledge. However, the donation service experience has not changed for over fifty years ever since the opening of the first blood bank.

The key problem is how blood donation service could be accessible for more people so as to increase the percentage of donors in the population. The broad adoption of mobile technology and its significant disruption in various service industries leads to the question that what the blood donation service should be in this digital age. Innovation in the blood donation service is needed to raise blood donation awareness, attract more young donors, and retain people who have donated before, and most importantly, convert them to regular donors.

The goal of the thesis project is to use design to help recruit more donors by innovating the blood donation system and services to make it more accessible for both experienced donors and new donors, to be efficient as well as effective in operation.

*Dedicated to everyone who helped in this thesis development and contributes to
the role of design in society*

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Chapter 1 – There is always a blood shortage in this country

1.1 GIVING BLOOD IS THE GREATEST GIFT ONE CAN EVER GIVE

Blood is one of the most important components in our human body. On average, 7-8% of the human body weight is from blood. It transports oxygen and nutrient to every single cell and gets rid of waste products such as carbon dioxide and ammonia. It is also vital to our immune system that keeps us immune from virus attacks.

Blood can be the most precious gift you can ever give to another person, because it saves lives. One pint of blood can help save the lives of up to three people. Blood transfusion is a need in many situations, whether it be for cardiovascular surgery, saving people who are severely injured in car crashes, or saving lives after natural disasters. Anyone might have the possibility of lying on the operation table and waiting for the blood transfusion from someone else. Giving blood can be valued as social responsibility.

Some facts about blood needs (Blood Facts and Statistics, 2015)

- Every two seconds someone in the U.S. needs blood.
- More than 41,000 blood donations are needed every day.
- A total of 30 million blood components is transfused each year in the U.S.
- The average red blood cell transfusion is approximately 3 pints.
- The blood type most often requested by hospitals is Type O.
- The blood used in an emergency is already on the shelves before the event occurs.
- Sickle cell disease affects more than 70,000 people in the U.S. About 1,000 babies are born with the disease each year. Sickle cell patients can require frequent blood transfusions throughout their lives.

- More than 1.6 million people were diagnosed with cancer last year. Many of them will need blood, sometimes daily, during their chemotherapy treatment.
- A single car accident victim can require as many as 100 pints of blood.

1.2 THE INCREASING DEMAND OF BLOOD TRANSFUSION IN AMERICA

“With increasing life expectancy and the subsequent increase in the number of age-related, chronic diseases, including cancers, that require blood and blood products for treatment, demand outstrips supply.”

—Dr Neelam Dhingra, *Coordinator for Blood Transfusion Safety*, 2012

Surgical operations

With innovation in surgical operations and the improvement of health care coverage system, we are experiencing the longest life expectancy ever in human history. Because of that, population aging has become a worldwide phenomenon. According to World Population Aging (1950-2050), the world has never seen such a high level of aging population as currently exists. The population aging has directly led to the increase of blood demand. The increasingly sophisticated medical and surgical procedures have made many surgeries such as cardiovascular and organ transplants possible. All of those major surgical operations need blood to be available on standby.

Childbirth

Severe bleeding during delivery or after childbirth is the leading cause of maternal mortality worldwide. Postpartum hemorrhage (PPH), an emergency complication of childbirth, which is defined as a loss of 500ml or more blood from the genital tract

in the first 24 hours after giving birth. When postpartum hemorrhage happens, urgent and timely treatment is required for treatment, including transfusion of blood and blood products, as women may die within one hour from heavy bleeding.

Accident

Fox News reported in an article (Car Crashes Kill 40,000 in U.S. Every Year, 2005) that Motor vehicle crashes in the United States result in more than 40,000 deaths per year. On average, more than 100 people per day died in car accidents in the U.S. The death toll for a single day can range from 45 to 252 people. Traffic accident victims usually suffer from severe blood loss and need an immediate blood transfusion.

Natural disaster

Blood bank experts say there often is a surge in giving blood after an emergency such as the September 11 attacks or Hurricane Katrina. For instance, the Boston Marathon tragedy moved many to donate blood. Many runners dashed straight to the hospital in order to give blood. The Red Cross announced hours after the disaster that its needs had been met. However, one thing important people don't realize is that blood is needed all year around, and many people who rush to give blood after the disaster may not think about it at other times.

1.3 THE NATION IS EXPERIENCING A MAJOR BLOOD SHORTAGE

Due to the increased demand of blood supply, many countries including the United States have been experiencing significant blood shortages. According to The American Red Cross, the increase in demand far outpaces the increase in blood donations, with donations increasing annually by about 3 percent and demand growing at 6 percent. The Red Cross is behind by 40,000 units on a daily basis. The actual need daily is around 80,000 units, but currently receives only 36,000 a day (ABC NEWS, 2014).

In the United States, an estimated 38% of the U.S. population is eligible to donate but less than 10% actually do each year. According to the America's Blood Centers, 4.5 million people in the country need emergent blood transfusion every year. They say that 3 gallons of blood can only support the nation's blood needs for one minute. Not only in the United States, but various countries also face a dramatic increase in blood usage and critical seasonal blood shortages.

Seasonal shortage

Summer is the most challenging donation season – especially July. Summer is when most people go on vacation and rarely think about giving blood during that time frame. However, blood needs are all year around. The demand is constant. Patients who are going through heart surgery, organ transplant, or victims of car accidents and natural disasters are unable to take a break.

Special blood groups

All blood belongs to one of the four groups: A, B, AB, or O. However, there are more than two hundred minor blood groups that can complicate the process of blood transfusions. About one person in 1,000 inherits a rare blood type. Rare blood types can cause a problem for blood banks and hospitals when unexpected blood transfusion is in need. For example, the rare blood type, Duffy-negative Blood, occurs much more frequently in people of African ancestry. The relatively rarity of this rare blood type in the rest of the North-American population can result in a shortage of that rare blood type for patients of African ethnicity, in need of a blood transfusion (Blood Book, 2010).

It's critical that everyone knows if he or she has a special blood type. Some patients with rare blood types need to be transfused with exactly the same rare type as their own. However, rare blood type is the most difficult to collect amongst all blood types, and could be out of demand when patients need an emergent transfusion.

Demographic change

The pool of donors is shrinking. It's actually 60 percent smaller than experts had previously thought. There are many reasons why fewer people are willing to give blood. Dr. Jay Menitove of the American Association of Blood Banks says new generations and younger adults seem less likely to be involved in blood donation than the baby boomers, who are getting older. In some cases the boomers are getting too sick to donate. Another reason for the demographic shifting in donor pool would be that due to the new donation safety regulation, many people are identified as not eligible for blood donation. For example, according to the Armed Services Blood Program, people cannot donate blood in the United States if he or she lived in Europe for more than five years since 1980 or more than half a year between 1980 and 1996. The Food and Drug Administration (FDA) has recommended such a ban because of the mad cow disease.

Chapter 2 – Secondary research

I started this project by conducting secondary online research. The methodologies included web-based research, literature review, and the review of case studies.

The primary goal of the secondary research was to understand the current blood donation service model and its evolving history in America. I chose to study the donor recruiting process of the blood donation center and its marketing strategy. As for blood donors, from reading donor reviews and literature on social behavior I gained some understand of both motivations and obstacles of giving blood.

2.1 BLOOD DONATION SERVICE OVER THE YEARS

The first recorded successful human blood transfusion happened in 1818. Afterward, due to the lack of knowledge and research of blood, it was followed by many blood transfusion failures. It wasn't until 1901 that German scientist Dr. Karl Landsteiner identified the four different blood types that people realized the cause of the transfusion failures was the inherited differences in people's red cells. This significant discovery led to the possibility of successful blood transfusions later.

In the beginning, scientist studied how to preserve blood for wounded soldiers during World War I. There was no breakthrough progress until World War II that preservative solutions like freezing technic and plastic blood bags were discovered. In 1936, the first true blood bank was organized at Chicago's Cook County Hospital. At first, blood transfusions were only available for front line wounded soldiers, however, as more and more blood bank opened across the country, they began to provide blood transfusions to other patients. To ensure blood transfusion safety, the government banned payment to blood donors. Therefore, blood donation in American is entirely voluntary nowadays.

Today, America's Blood Centers' member organizations make up North America's largest network of non-profit community blood centers. It operates more than 600 blood donation collection sites. Together the network provides half the U.S. blood supply to over 3,500 hospitals and healthcare facilities (American's Blood Center, 2012).

2.2 BLOOD DONATION PROCESS

There are many different ways to donate blood. The three most common ones are through the hospital, local blood donation center, and blood drive. Mobile blood drives are the most effective way for blood centers to reach out to the public. Although the donation channels can be different, the donation process is generally the same.

Registration

Donors are required to sign up with their basic personal information. They are asked to present a photo ID, which could be donor card, driver's license or other forms of official ID. Meanwhile, donors need to fill out a questionnaire with basic eligibility checks.

In order to ensure blood safety for both donors and donation recipients, the blood center has specific eligibility criteria that must be met each time a person donates blood. Among many eligible requirements, the four essential ones are:

- Weigh at least 110 pounds
- Over 17 years old
- Feels healthy
- Has not donated recently

Health History & Mini-Physical

Right before the donation, donors will go through a confidential interview about

their basic demographics, health information, and medical history. Afterward, donors take a mini-physical exam to determine if they are physically capable of donating blood. The exam checks donor's body temperature, pulse, blood pressure, and hemoglobin level present in a sample of blood.

Transfusion

The actual donating process takes less than 15 minutes. Donors are seated in the specialized lounge chairs. Once all the plastic blood bags are labeled, and needles are in place, donors will be asked to squeeze a red ball to keep the blood flowing while the blood is drained. After the required amount of blood is removed, a nurse will come over to remove the needle and place a bandage over the arm.

Refreshment

After donating, donors can sit and relax in the canteen area, where they can have some snacks and drinks provided by the donation center. In general, donors are suggested to sit and rest for at least 15 minutes after donating. Donors are also advised not to do heavy lifting or vigorous exercise for the rest of the day.

2.3 STRATEGY FOR DONOR RECRUITMENT

Emotional marketing

Marketing of blood donation adopts many strategies from public service advertisements (PSAs). Public service advertisements are created to persuade the public to take an action towards a certain concerning issue. It could promote helping oneself or helping others voluntarily. It is also used to educate the public and motivate them to contribute some value to society. PSAs can create awareness, show the importance of an issue, convey information, or promote a behavioral change.

According to Richard P. Bagozzi and David J. Moore (Public Service Advertisements: Emotions and Empathy Guide Prosocial Behavior, 1994), each year more than \$4

billion is spent on public services advertisement in the United States alone since public service is an important part of social marketing. There are two distinct kinds of public service advertisement. One type targets individuals who are looking for help (e.g., drug addicts and alcoholics), people who are vulnerable or suffering from other severe life and health problems.

The other type aims at convincing the public to help others, mainly by donating money or volunteering time or physical effort towards a valuable cause. It's how blood donation service recruits blood donors. The goal is to persuade the public to donate blood voluntarily to save other people's life. The purpose of empathy marketing in blood donation is to establish an emotional connection with the potential donors and embed the message of helping others in the mind.

Material incentives

To meet blood requirements and overcome shortages, besides applying emotional marketing strategy to invoke empathy and altruism from the public, blood donation centers in the United States often recruit donors by the widespread use of material rewards – which may include mugs, t-shirts, or store gift cards.

Based on the research presented in the article “Blood donor incentives: A step forward or backward” (2001), it was found that 56% of American blood donors received some kind of incentive, including items of appreciation (26.8%), paid time off work (22.4%), blood credits (8.1%), or cash (0.2%). In accordance with this Policy Guide, the donation is considered paid if the incentives are transferable, refundable, or redeemable for cash and a market exists for the incentives.

There has been some discussion regarding the issue whether incentives are encouraging or discouraging blood donation. The concern for incentives is that they might attract risk donors, which will endanger blood transfusion safety.

Most importantly, it would decrease the percentage of donors who give blood based on the altruistic motivation. In the book “A Price is a Signal: on Intrinsic Motivation,

Crowding-out, and Crowding-in” (Friedel Bolle and Philipp E. Otto, 2010), the authors describes a phenomenon that a previously unpaid activity is paid, and then we often observe that this activity is reduced. In this book, it is hypothesized that the price offered is taken as a proxy for the “value” of the activity. Depending on how the person assessed the activity previously, crowding-out or crowding-in is implied, an effect with or without persistence after stopping the payment. In the case of blood donation, a previously unpaid activity is paid; we might experience the decrease of experience donors who have donated blood because of altruism. Material incentives to donate might crowd-out intrinsic motivations. Richard Morris Titmuss has done great work in this area and reported in his book “The Gift Relationship: From Human Blood to Social Policy” (1997) that many blood donors stopped donating after payment for their activity had been introduced. He pointed out that commercializing the altruistic setting in blood donation has the crowding-out effect on the number of blood donors.

2.4 MOTIVATIONS FOR DONORS TO GIVE BLOOD

Motivation is an individual’s human organismic growth. It is symptomatic of an individual seeking to expand their personal sense of autonomy, social relatedness, and competence. Organismic theories in psychology are a family of holistic psychological theories, which tend to stress the organization, unity, and integration of human beings expressed through each individual's inherent growth or developmental tendency.

In the book (This is Service Design Thinking, 2011), motivation is mapped into a six-stage continuum from a motivation to extrinsic motivation to intrinsic motivation (See Figure 2.1).

Motivation spectrum:

- I don't know, and I don't care...
- I'm only doing this because I have to...
- I'd feel guilty if I didn't do this properly...
- I think it's important to do this because...
- Doing this is really important...
- I love doing this and being immersed in the process...

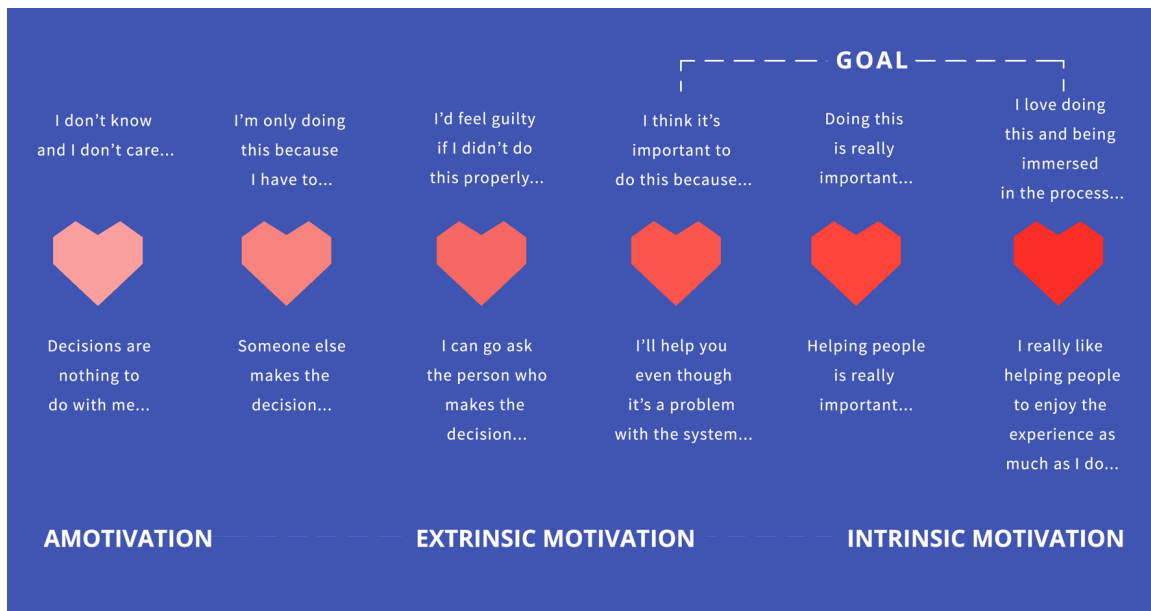


Figure 2.1: Six-stage continuum of motivation

Different types of motivation for giving blood

Yet, even brief reflection suggests that motivation is hardly a unitary phenomenon. People have not only different amounts, but also different kinds of motivation. That is, they vary not only in level of motivation (i.e., how much motivation), but also in the orientation of that motivation (i.e., what type of motivation).

- Richard M. Ryan and Edward L. Deci. *Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions*. 2000

Based on the research “The blood donation experience: self-reported motives and obstacles for donating blood.” (2008), the most frequently reported reasons for giving blood for the first time were 'influence from a friend' (47.2% of donors) and 'request via media' (23.5% of donors). 'General altruism' (40.3%) was the most commonly reported motive for donating blood, followed by 'social responsibility/obligation' (19.7%) and 'influence from friends' (17.9%).

Altruism

Altruism is the principle or practice of concern for the welfare of others. It is a traditional virtue in many cultures and a core aspect of various religious traditions. Altruism is the ultimate internal motivation of people helping their friends, colleges, or even strangers.

In blood donation, altruism was the most common general motivation for donating blood. Most of the donors give blood based on the reason that they would like to save other people's lives without expecting any kind of rewards. They regard donating blood as a dignified social behavior since life can be viewed as the greatest gift one can ever give to someone else.

Social Responsibility

Winston Churchill once said: “We make a living by what we get, but we make a life by what we give.” Being socially responsible means that an individual or organizations act for the benefit of the society they live in, for the culture, economy, and environmental issues.

It's not difficult to understand that social responsibility plays an important role in motivating people to donate blood. Blood donors have a high awareness that each individual should make positive contributions to the society. They care about the community they live in and take active participation in the solving of some of the community problems. They view the well-being of the entire society as important as their own well-being

Influence of friends and relatives

Friends and families whom we are surrounded by have a strong influence on the decision we make in our life. For the first-time donors, direct influence from friends/relatives is more influential than altruism. This interesting finding supports the notion that different strategies should be adopted to recruit donors. For instance, for potential donors, a good strategy might be recruitment through experienced donors, emphasizing the experience on 'donating together with friends'. However for experienced donors, the strategy should be strengthening their sense of contribution and praising their altruistic behaviors.

2.5 WHY DO PEOPLE NOT DONATE BLOOD?

According to the report (Reasons people don't give blood, 2013), the top three reasons why people don't give blood are: 'I don't like hospitals or am scared of needles', 'I am too busy', and 'no one ever asked me'.

Apparently, compared to other voluntary social behaviors, donating blood is much more personal. It's not about donating your money, physical effort or time, but about giving others something that is intrinsically part of you. Although the actual donating process takes less than 15 minutes, it requires much more courage than other types of donations. It's difficult for people to conquer the fear of blood and needles. Besides, due to an outdated marketing channels, blood donation is not something people would think about on a daily basis, which explains why many people have never even thought about donating blood and feel like no one ever asked them to do so.

2.6 TWO EXISTING DESIGN SOLUTIONS

Collaboration between the American Red Cross and IDEO, 2007

In 2007, the American Red Cross collaborated with the consulting firm IDEO to

improve the blood donation experience. After three months of research by talking with donors and non-donors, they found emotional associations have a substantial impact on both groups. By understanding people's reasons for giving blood and not giving blood, they realized that money could be a motivator, but it would not be a long-term strategy. The biggest motivator should be the desire to help others. Therefore, IDEO designed an experience that helps more people build up the empathy mindset. Due to the decline of youth involvement in blood donation, and the realization that the population of committed donors would be too sick to donate one day, the target audience of the project was young donors.

They focused on redesigning the mobile drive environments and service interactions. The design featured a new drive environment for both blood donors and donation staffs. It included furniture components such as carts and podiums that support both social and medical functions. They also created a new branding language for The American Red Cross (See Figure 2.2).



Figure 2.2: IDEO

(Photo Source: <http://www.ideo.com/work/donor-experience-for-american-red-cross/?work/featured/red-cross/>)

Haemobility, 2013

Haemobility is a project implemented by a group of four postgraduate students from Innovation Design Engineering, a joint Masters program between the Royal College of Art and Imperial College London in the United Kingdom (UK). The project focuses on the enhancing the mobile blood donation service experience in the UK.

Haemobility has three main goals. First it is designed to raise the awareness of the blood donation service and create an informed knowledge of the process amongst the UK population. Secondly, the project aims to increase participation in blood donation, a necessary action for the future of the aging population. Catching young donors is particularly important, forming the ability to create lifetime donors. The final focus of the project is to improve the mobile blood donation service for three key stakeholders, which are donors, donor carers and the National Health Service blood Service.

After primary and secondary research, the team realized that it's not one single aspect that needs to be redesigned; instead the entire donation service needs to be innovated. The team rethought the space of the donation center. They came up with a mobile donation trolley that includes design components for special organizations. The mobile trolley is designed to allow easy set up in different locations like malls and train stations. Besides the mobile trolley, the team also redesigned new needles that look less intimidating to blood donors, and a new blood tester to encourage new donors. (See Figure 2.3)



Figure 2.3: Heamobility

(Photo Source: <http://cargocollective.com/haemobility/What-is-Haemobility>)

Chapter 3 – Primary Research and Research Synthesis

Primary research helps to figure out the three key components in the user experience design: audience, touch point, and context.

Audience

The audience is the target user whom the design is speaking to. A critical question to ask is what are we trying to do with the audience. Are we trying to persuade, inform, entertain, influence, or get the user to modify their behavior? If so, what should the message be? And what research should we conduct to understand the users?

Touchpoint

Designing the touchpoints in the service addresses what channels are the consumers using? Is the model of user behavior different in each channel? How are we documenting the customer journey? What are the unique opportunities offered by each channel?

Context

Context means clarifying different scenarios where users might interact with the service. What is the user's situation when he or she is interacting with each touch point? In order to answer that question, there are some factors to look out for:

- Triggers
- Pain points
- Environmental influence
- User priorities
- Distractions or points of disengage

3.1 DESIGN ETHNOGRAPHY

Design ethnography approximates the immersion methods of traditional ethnography, to deeply experience and understand the user's world for design empathy and insight.

- Bella Martin, Bruce Hanington. *Universal Methods of Design*. 2012

In order to genuinely experience and understand the user's world for design empathy and insight, I conducted immersive ethnographic research, such as field observation, shadowing, and contextual interview.

Facility observation

The Community Blood Service of Illinois (See Figure 3.1) was visited to gain some first-hand information about the working environment and donation process. Two managers at the blood center at the Community Blood Service were also interviewed and answered research questions about the process of donor recruiting and organize blood drives.



Figure 3.1: Community blood service of Illinois

Donor shadowing

In order to collect insights through the detailed nuance of real-time exposure, I shadowed two participants throughout the entire donation process and documented the experience with notes, photographs and video (See Figure 3.2)



Figure 3.2: Donor shadowing

Contextual inquiry of donors

To be more immersive, I volunteered at the Red Cross. It put me on-site to observe and discover the experience gap. Each donor was interviewed at both the beginning and the end about their donation experience (See Figure 3.3). Main questions of the interview are:

- How did you learn about the blood drive?
- What's your motivation behind donating blood?
- What are your struggles during the entire process?



Figure 3.3: Contextual interview

Staff interviews

The staffs that work on-site and interact directly with donors probably are the best resources for information. Through their answers, insights were generated about donation and also the nature of their job (See Figure 3.4).



Figure 3.4: Staff interviews

3.2 IDENTIFY TARGET USERS – YOUTH AND MIDDLE AGE GROUP

According to previous research, young adults are not as involved in blood donation as baby boomers are. The crisis we are facing today is that mature adults from that generation are getting older, and will eventually be too sick to donate.

Based on the report (Changing age distribution of the blood donor population in the United States, 2009), donations by repeat donors 50 years or older as a proportion of total donations increased from 22.1 percent in 1996 to 34.5 percent in 2005, or 1.4 percent per year, whereas donations from repeat donors of 25 to 49 years decreased from 49.1 percent in 1996 to 37.1 percent in 2005, or 1.3 percent per year. After adjusting for general population trends, the effective number of donors decreased by more than 10 percent in female and male repeat donors of age 20 to 49 years and male first-time donors of age 25 to 49 years from 1996 to 2005; female and male repeat donors of age 25 to 39 years decreased by greater than 40 percent.

Prevalence rates of major infectious disease markers decreased by 3.3 percent or more per year for first-time donations and by 6.4 percent or more per year for repeat donations (See Figure 3.5).

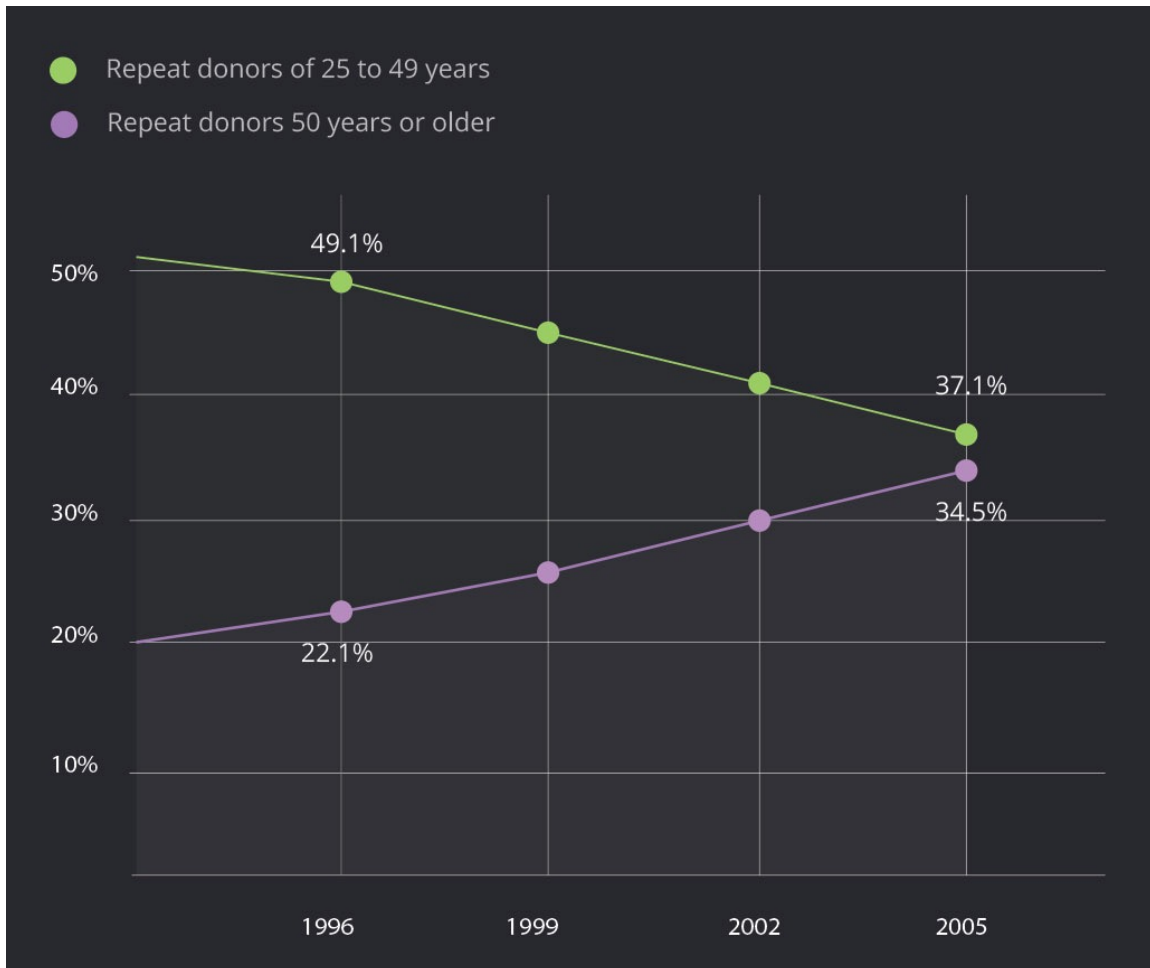


Figure 3.5: Demographic change of donors

The age pattern based donor distribution pattern justifies the assumption that youth and middle-aged groups those days are less likely to be blood donors than the last generation. This suggests that the country will continue to suffer from the increasing blood supply shortage unless there is a new effective recruitment method to regain the attention and interest of more young adult and middle age groups.

The American Red Cross has already realized the importance of attracting youth and middle age groups. They know that youth can provide the greatest boost for the pool of donors. In order to persuade more young people into blood donation, the American Red Cross has launched a donation campaign of raffling off Apple products. They also tried to collaborate with schools and educational organization by offering scholarships to teenagers who donate blood. Besides material incentives, the American Red Cross has started marketing blood donation via popular social media networking sites such as Facebook and MySpace since early 2000'.

It is very important to educate young people about blood donation. The earlier they are aware of the issue, the better chance they would become a frequent donor in their later life, and a higher possibility they would influence people around them about blood donation.

3.3 STAKEHOLDER MAPPING

After research, emerged a general picture of the key players in the current blood donation service system. A stakeholder map (Stakeholder map of blood donation service model) was created as a visual reference about the different key constituents in the blood donation experience and their correlations (See Figure 3.6).

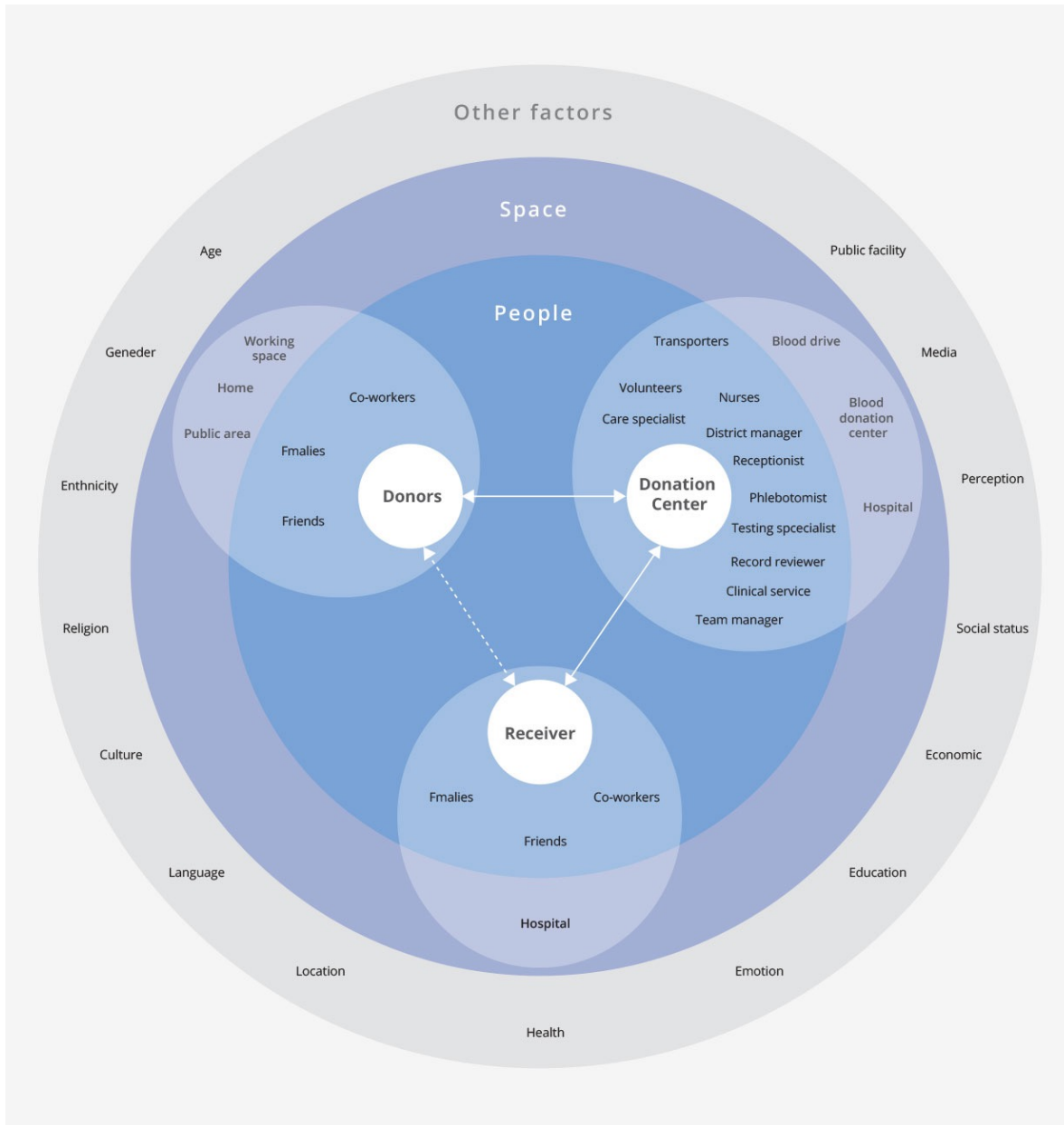


Figure 3.6: Stakeholder map of the blood donation service model

It follows the donation process from donors, donation center to blood receivers. Besides the people, the environment is another crucial element that defines the service experience. Therefore, a second circle of the “Environment” was added outside of “People”. The “Environment” describes the places where the service interactions take place. The largest circle outside is used to identify other elements

that can influence people's decision of giving blood and their donation experience. Those are the elements that should be taken into consideration for the next ideation stage.

Donors:

People: Co-workers; Families; Friends

Environment: Working place; Home; Public area

Donation center:

People: Receptionist; Phlebotomist; Testing Specialist; Record Reviewer; Clinical Service; Team Manager; District Manager; Nurses; Care Specialist; Volunteers; Transporters

Environment: Blood drive; Blood donation center; Hospital; Testing Lab

Receiver:

People: Families; Friends; Co-workers

Environment: Hospital

Other factors:

Public facility; Media; Perception; Social status; Economic; Education; Emotion; Health; Location; Language; Culture; Religion; Ethnicity; Gender; Age

The main lesson gained from the stakeholder mapping is that blood donors and receivers do not have any connections during the service interaction. The connection between them is filled by the blood donation service and hospitals. Both the donor and receiver would be anonymous due to blood donation safety regulations. However, the re-connection of the relationship between donors and receivers would be a possible design opportunity. It increases information transparency and adds more personalization to the service. Blood donation is a complex issue with many other factors, such as health, age education, and culture – influencing the decision to give blood or not.

As my research continued, more understanding was developed about the current blood donation service. The creation of the stakeholder map evolved as the actual constituents, their working process, and relationship were more clearly identified and defined.

3.4 AFFINITY DIAGRAMMING OF RESEARCH

An affinity diagram was used to externalize and meaningfully cluster observations and insights from the research. It visually displays comments from donors' interviews with patterns of forming themes, which can be determined by the pain points of the experience of both experienced donors and non-donors (See Figure 3.7).

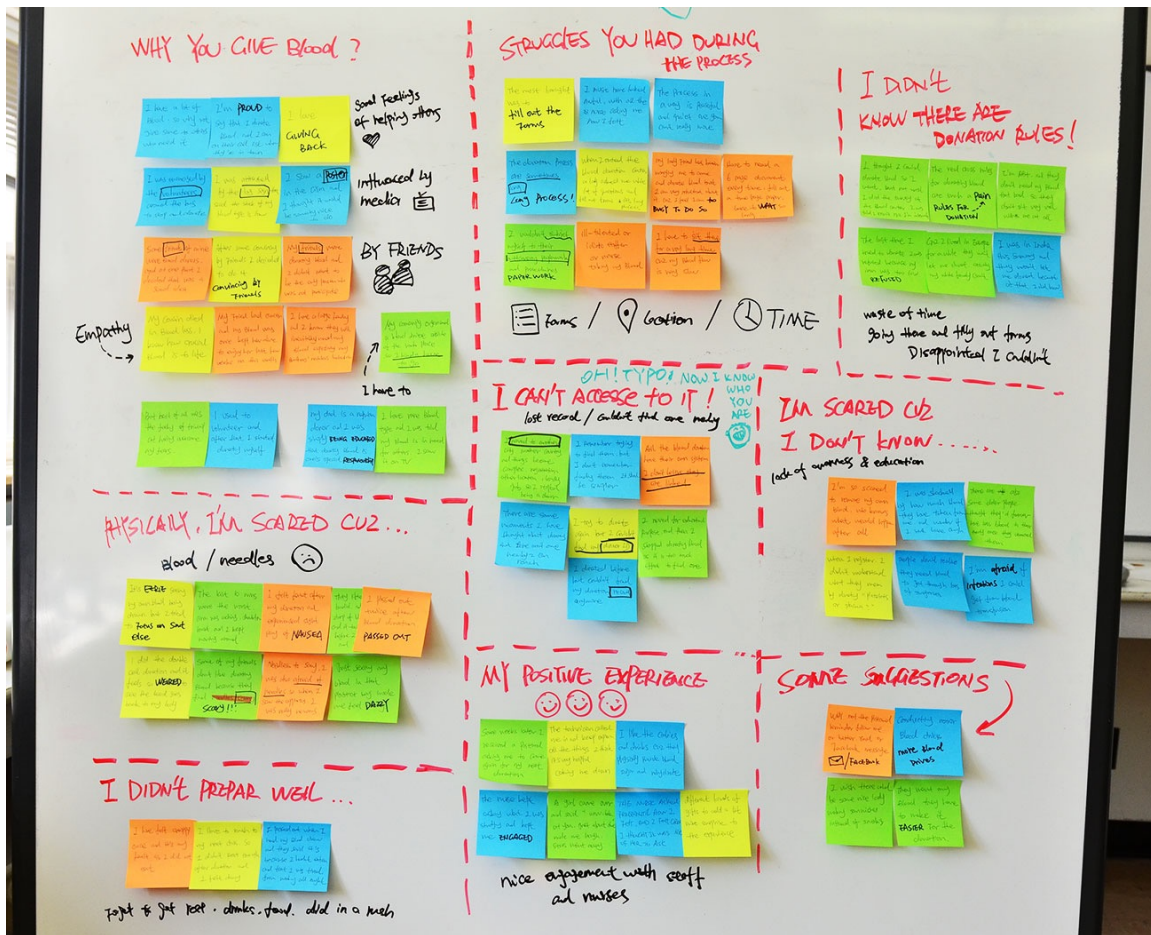


Figure 3.7: Affinity mapping of research

The data used in the affinity diagramming comes from both primary and secondary research – the 22 donors interviewed at the blood drive, and another 25 feedbacks collected by online research. Mainly there are four different types of users in the research: frequent donors (people who kept donating blood in a regular base), people who have already donated blood but later on they stopped, people who have never donated blood before but really want to, and people who are unable for blood donation – for possible reasons such as: physical inability, mental fear of blood or needles, or laziness.

Insightful quotes were jotted down on sticky notes. Quotes that share a similar intent, problem, or issue, or that share an affinity were clustered together. Out of

this affinity map, a story about donors, their struggles about donation, perceptions, and the nature of their problems, started to emerge.

The key themes I found through the affinity mapping were:

- People are heavily influenced by their friends and families about their decision of giving blood.
- Their willingness to help starts with empathy, but later was hindered by service inaccessibility (information, time, location, etc.).
- Their fear of blood donation mainly comes from physical issues (low weight, fainting at the sight of blood) and mental fear.
- The mental fear of donating blood stems from ignorance.
- People don't know that much about blood donation rules such as eligibility, and are disappointed when donation centers reject them.
- People like the personal care and touch in the service.
- People who are educated more about the importance of blood donation from a young age are more likely to become frequent donors later in life.

3.5 USER JOURNEY MAPPING

The user journey map is a visualization of key experience people has when interacting with the blood donation service (See Figure 3.8). The map is a collective reflection of both primary and secondary research done in the previous research stage. It highlights users' needs, questions and feelings throughout their interaction with the blood donation service. Pain points were mapped out with red color during each touch point, which gives an overall view of the possible design opportunities.

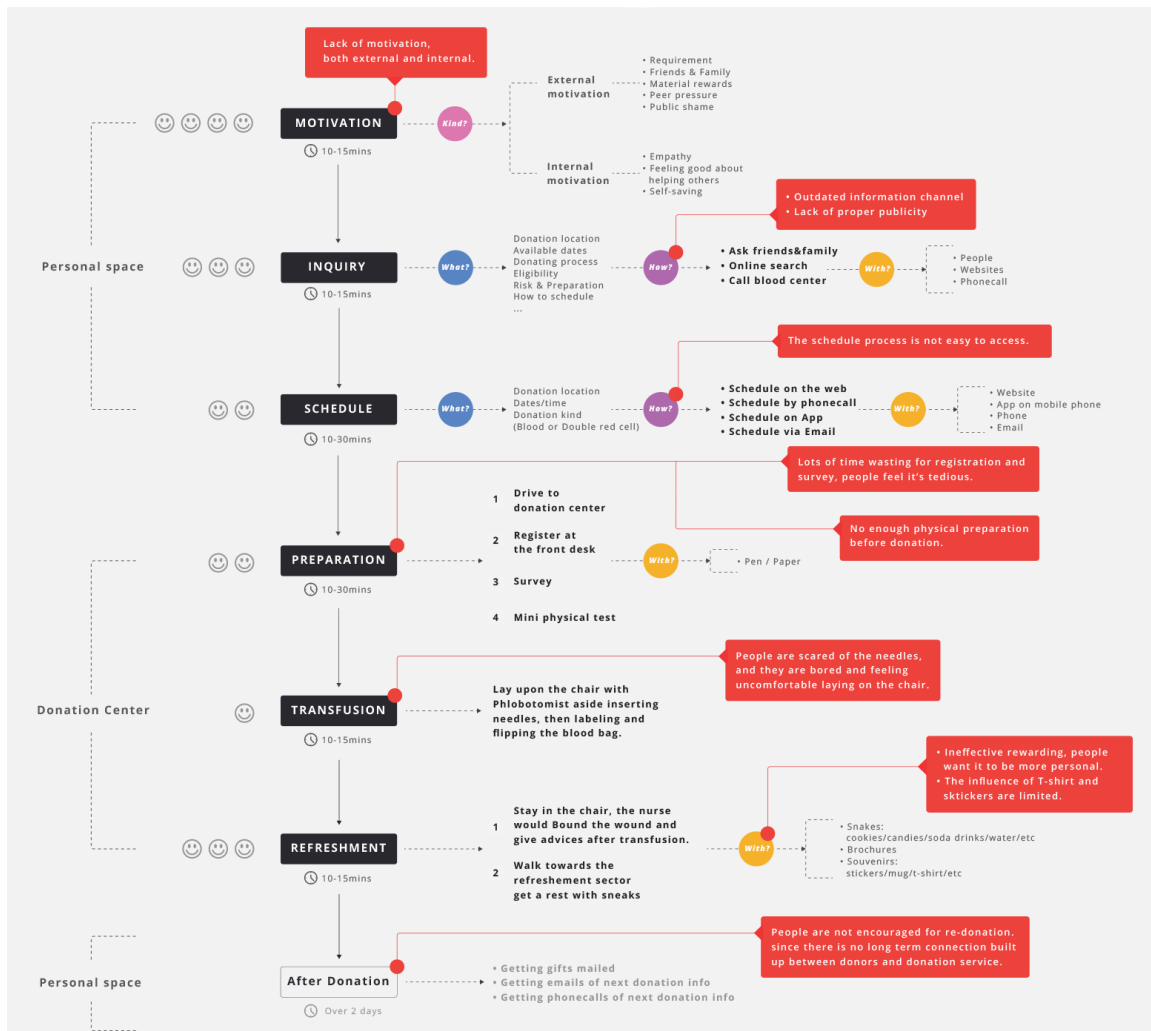


Figure 3.8: User journey map

The data comes from video recording of shadowing two donors during the entire donation process and web based secondary research.

Documentation of the user journey map:

Motivation

- Internal motivation: empathy; feeling good about helping others; self-saving.
- External motivation: social requirement, peer pressure, influence of families and friends, and material rewards.
- Pain points: Lack of both external and internal motivation

Inquiry

- Gathering information (donating process, donation safety, etc.)
- Pain points: Outdated information channel.

Schedule

- Check available time, location and donation kind; make an appointment by filling out basic information
- Pain points: The schedule process is difficult to understand. No easy channel to schedule a donation.

Preparation:

- Get to blood drive or donation center; register; fill out survey; mini physical test.
- Pain points: Lots of time wasting for registration and survey, the process is very tedious. Not enough preparation before donation

Transfusion

- Lay on the chair while phlebotomist inserting the needles, and then labeling
- Pain points: Fear of needles and blood; Feeling uncomfortable seeing the blood transfusion process; Uncomfortable or boring environment during donation

Refreshment:

- A nurse binds the wound and gives advises after transfusion; donors relax in the refreshment sector with snacks and drinks.
- Pain points: Ineffective rewarding system.

After donation:

- Getting gifts (e.g. mugs, shirt) or receive rewards point through donor card
- Pain points: People are not encouraged to donate regularly because they do not feel their donations are valued.

Chapter 4 - Service Ideation

4.1 BRAINSTORMING WORKSHOP: COLLABORATING WITH USERS

Co-creation is based on the belief that experience is all about people; it's about what they want, how they feel, and what's valuable to them. It helps to generate ideas and to create collaborative concepts together with the people whom we design for. At the core, it believes that the users' presence is essential to the creative process. The key to run a successful co-creation session is to engage, work with, and empower users to generate ideas and to create concepts collaboratively.

Since the goal of the design is not only creating a better service for experienced donors, but also to target at people who are new to blood donation, therefore, people who are experienced donors, non-donors, and people who work at the donation center were invited to the co-creation workshop for brainstorming. The theme of the brainstorm was "I wish blood donation could be like.....?" (See Figure 4.1). The goal of this co-creation session was to understand what's the ideal service model would be for blood donation and what particular aspects of changes people think could improve the donation experience.

Workshop agenda:

10mins: Workshop intro of project information and fill in people with previous research results.

20mins: Self-brainstorm around "I wish blood donation service experience could be like..." and write down on the post-it.

5mins: Break

5mins: Individually post all the ideas on the whiteboard

20mins: Each participant shares their ideas and groups the results into different categories.

Rules for the workshop:

- There is more than one expert. We all have our special understanding about things around us.
- Everyone can be creative. Not just designers can design things; innovation can come from anyone.
- We can all listen. Everyone is prepared to contribute, and empathize with user needs.

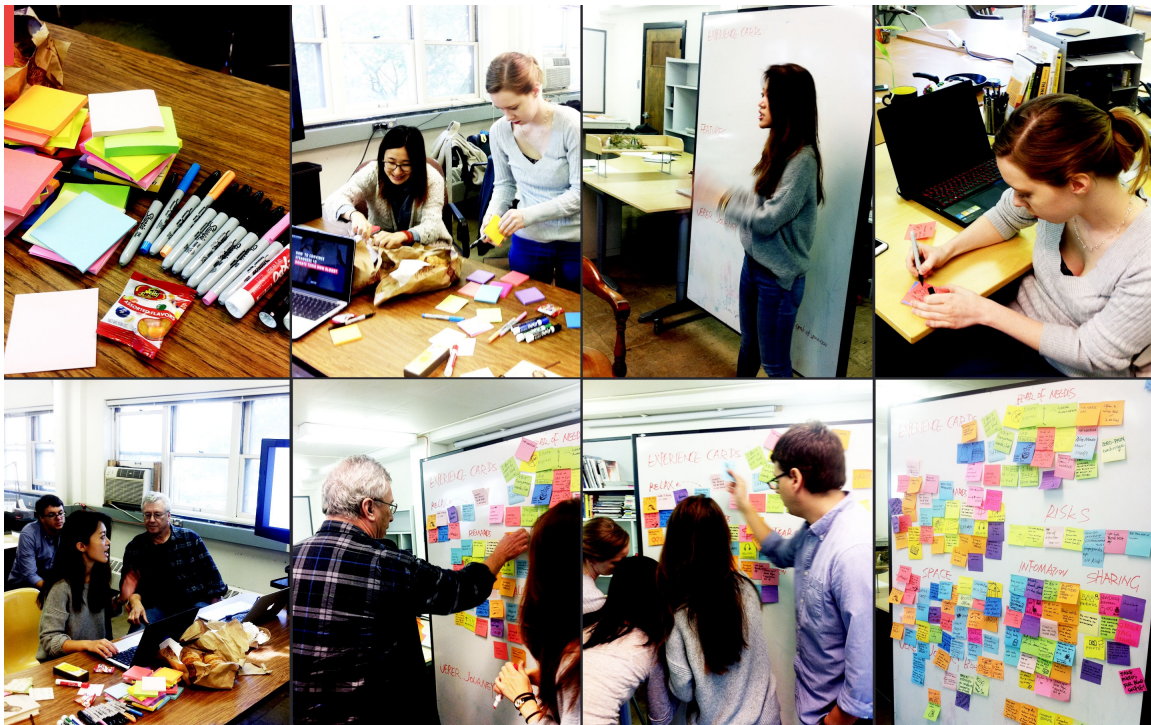


Figure 4.1: Co-creation session

78 concepts were gathered after the co-creation session. As more and more ideas posted on the whiteboard and grouped into different sections, main themes started to surface from the whiteboard. Altogether, there were six issues generated from the session, which were: relaxed experience, influence of people, education, rewarding, fear, and service accessibility (see Figure 4.2).



4.2 ESTABLISH DESIGN CRITERIA

Combining the themes generated from the co-creation session together with the insights gathered from previous primary and secondary research, here are the four design criteria developed for this project.

Service Accessibility

A very positive result from the research is that people generally want to help; they are just looking for that opportunity. It means that the problem is not at the actual transfusion process, but how to increase the awareness of blood donation and the opportunities to donate, so that more people could get easy access to the service. The most important fact is that when they want to help, their attempt won't be hindered by service inconvenience.

Create a ripple effect to influence more donors

Social change happens because of the efforts of each individual in a community. The good deeds we do are most of the time infectious, and small acts can influence

others. In the end, it can build up to a significant social change. Thanks to the power of social media and telecommunication, many successful campaigns and services that have created a significant social influence started from small groups of passionate people.

Influence can come from everyone around us; our friends, families and co-workers. It plays a crucial role in the recruitment of potential donors. According to the research result, the influence of friends and families is one of the most significant incentives for people to give blood. The goal to increase influence is to start from experienced donors, focusing on the experience sharing so that to encourage them to influence others. The strategy is to build up a ripple effect within the service for a bigger change.

Storytelling

Stories are very powerful. They grab and hold attention. But they do more than that. They also help people process information and they imply causation.

- Weinschenk, Susan. *100 Things Every Designer Needs to Know About People*, 2011.

Stories are the most powerful tool to transmit information. If we take a look at the stories people are following in this age of social media, the line between author and audience is very much blurred. When people get into a story, they are asking to be passengers or co-authors, not onlookers. What really attracts people to get involved in a story is not the story itself, but the power of how the story could enable them to connect and influence others. We want a story we can immerse ourselves in it. Storytelling is effective when the audience goes beyond self-awareness to take a role in the story itself. As for blood donation services, the experience should be more than empathy, but a story about each donor; about how each of them saving lives of

others to make the society a better place to live.

Creating a fun and relaxing environment

Currently, blood donation campaigns are often made based on stories that evoke empathy. However, as the donor percentage slides down, people start to question, “what if empathy does not always work?” The truth is, even though, many people are empathic about the blood shortage condition, the empathy they have is not directly leading to actions. Sometime, the empathy is not enough for people to conquer their laziness, fear of blood, or the negative feelings towards hospitals.

By natural we all love being surrounded in a bright and comfort environment. What if we can reverse the rule? What if public services like blood donation could be as relaxed as coffee shops, or as enjoyable as watching movies?

4.3 INITIAL CONCEPTS AND EVALUATION

Visioning concepts is a very crucial but also very challenging. Filtering and being realistic are part of the design job to be faced at this stage. There are many interesting ideas generated from my co-creation session. The challenge was to select valuable ones to carry on to the next design phase. It was a great decision-making stage. The ideas were mainly weighted on technical and financial feasibility. Promising solutions were developed, and best ideas were illustrated with eight storyboards. Afterwards, a speed dating session was conducted with returning participants and also new ones to get feedbacks on those ideas.

Concept-1: Collaborating with local business and align blood donation together with people's daily life

Persona development

Name: Kelvin

Age: 21 years old

Occupation: Student

Tech savvy level: high

Life background:

Kelvin is a senior in college and leads a pretty busy academic life. He goes to the coffee shop in his school building frequently. He has never donated blood before, although he saw blood drives on campus from time-to-time. He thought about giving blood would a right thing to do, but also he felt that the process seems really complicated.

Experience journey:

Kelvin went to the nearby café after lunch for coffee as usual where he ordered a latté. When he was paying, he noticed a card saying “coffee reward for donors: Thank you, my friend” and also that there is an app to download. He looked at the card and got to know that a local blood donation service was collaborating with coffee shops in school, and the coffee was a thank you gift from your blood receivers. Every donor can get up to three free cups of coffee. Since Kelvin has been thinking about giving blood for a while, and he likes free coffee, he grabbed his phone and downloaded the app. At night, when Kelvin opened the app, there was a quick walk-through about the process of donation, which made him realize that blood donation is not as complicated and time-consuming as he thought.

Days later, when Kelvin was walking down a campus street, the app beeped and showed there was a blood drive nearby, and that it also fits his class schedule. The application then asked him if he would like to join this donation event. Kelvin thought it was convenient, so he tapped on the "schedule an appointment" right away. He followed the directions from the phone to the donation center within a five-minute walk to the student union. Since he already filled out information ahead, he saved a lot of time from waiting and filling out forms there. After donating blood, the doctor scanned his phone, and the coffee reward went right to his account. The next time in the café, he paid with his reward and got a free coffee. He later received

a "Thank you, enjoy your coffee!" text from his phone. It also asked if he would like to share it with social media. He tapped yes and shared it on Facebook and Twitter.

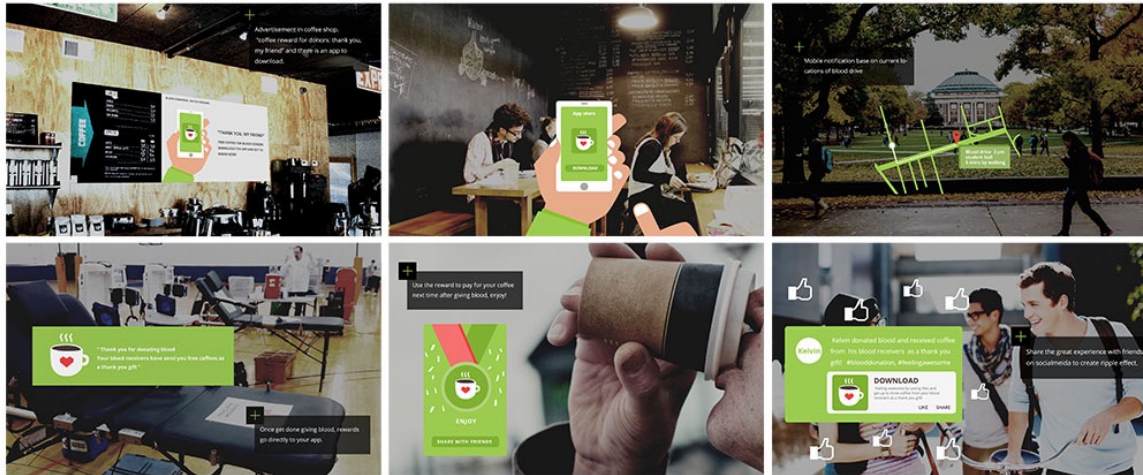


Figure 4.3: Storyboard-1

Concept-2: I am here when you need it; why not return the favor?

Persona development:

Name: Lisa

Age: 28 years old

Occupation: Restaurant host in downtown Chicago.

Tech savvy level: high

Life background:

Lisa is very active on social media and she checks her phone frequently. Lisa commutes by bus to work, which takes her 30 minutes. She has never given blood before because she feels it's a bit scary since she hates the feelings of hospitals.

Experience journey:

Lisa has been out running errands today. When she waits at the bus station, she notices she is exhausted and thirsty. She looks around to see if she can find some

water, when she sees an advertisement with a water tube on top dripping water out of a vein of an arm from the poster. It says: “I am here when you need it, why not return the favor?” She is immediately attracted and walks closer to see more. She discovers it’s actually a public water fountain. She grabs the free cup on the side rack and fetches some fresh water out of it. When she is drinking the water, she looks at the poster and realizes it’s a public advertisement about blood donation, and the theme is “return the favor.” She’s curious about it and downloads the application on her phone. She also takes a picture of the water fountain and posts it on her Facebook and Instagram. When she gets on the bus, she opens the application and signs up for it. The application tells her about blood drives nearby based on her pinned location. It also educates her about basic blood donation. She gets a notification informing her that there is a drive going on next Friday around her working place. She signs up for it right away and the event automatically synchronizes with her calendar.

When “Next Friday” is coming, the application reminds her about her donation schedule. It shows a map and how she can get there. It is only a four-minute walk. She follows the route and meets a doctor who pulls out her record appointment, and she waits for only five minutes before the actual donation. Lisa shared the experience with her friends and recommended them to download the app too.

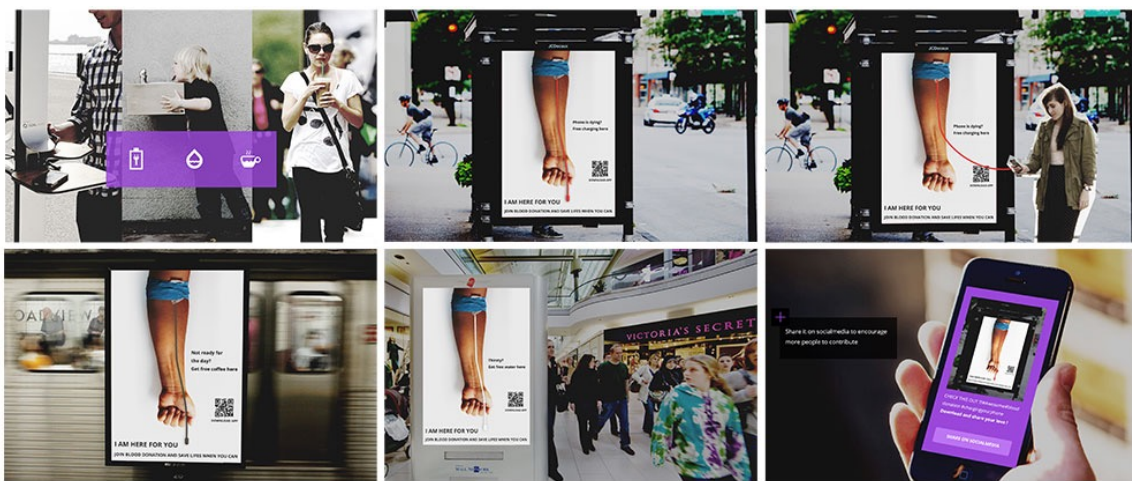


Figure 4.4: Storyboard-2

Concept-3: Mutual benefit

Persona development:

Name: John

Age: 32 years old

Occupation: Photographer

Tech savvy level: high

Life background:

John lives a pretty healthy lifestyle. He goes to the gym regularly, commutes by bike, and he is a Fitbit user for a year. He donated blood several times when he was in his 20's. Afterwards, he thought about giving blood once in a while but forgot since he changed jobs two years ago and moved to another city. He lost contact with the blood donation center back home and all his donation records.

Experience journey:

As John checks his running data after exercising at the gym on his Fitbit app, he notices a pop out window advertising a free physical test for blood donors. It turns out a blood donation center is collaborating with Fitbit to encourage more people to give blood. He reads it and feels it would be a good idea to give blood since he would like to know how healthy he actually is. Besides he has always been thinking about giving blood again. He taps to download the application. When he opens the application, and he sees all the blood drives nearby his location. Also, he understands that his blood type is actually in high demand in the local area. He checks on "Notify me by my location." Next week, when John goes to the gym, his app alerts him that the blood drive was going on currently in the gym lobby. He schedules an appointment for one hour later through the application.

When he gets there, he was able to skip the registration line since he already made an appointment ahead of time. He goes directly into the donation process. After the

donation, the doctor tells him he would receive a full record of his body test report through the application within three days.

Three days later he gets an app alert notifying him that the report is ready. He opens the app and reads his report. The results turn out pretty good in his opinion. In the end, it also shows a message that asks him to “share the care with your family and friends.” He felt sharing would be a good idea, so he shares the report with his parents and also a couple of his close friends via email. His family and friends are happy that he is in a good shape and also proud that he started giving blood again. Some of his friends were introduced to the application and started to also use it for blood donation.

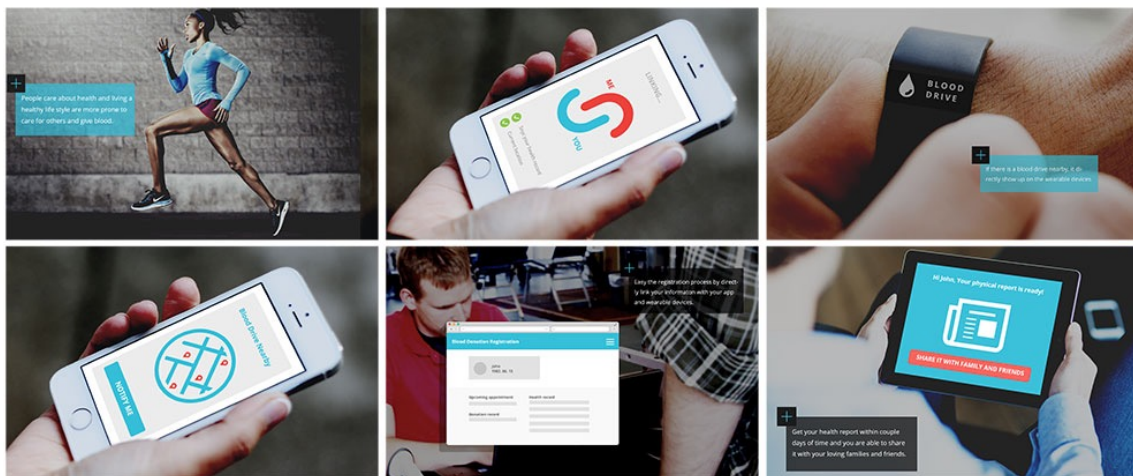


Figure 4.5: Storyboard-3

Concept-4: A relaxed environment for blood donation

Persona development:

Name: Kelly

Age: 27 years old

Occupation: Nurse

Tech savy level: High

Life background:

Kelly graduated from nursing school two years ago and now works as a nurse in a cardiology hospital in downtown San Francisco. As a nurse, Kelly knows much more about blood donation than others. However, she hasn't donated blood ever since she graduated from nursing school. After work, Kelly likes watching movies. She shares a Netflix account with her boyfriend – whom she is currently living with.

Experience journey:

Kelly likes to watch television shows on Netflix together with her boyfriend when they both get off work. Tonight, when they launched Netflix, a pop out window appears saying, "Netflix is collaborating with the America Blood Donation Center on a Movie Hangout campaign." They read the details about the campaign and learn that Netflix and The American Blood Donation Center are working together to host an outside movie event to attract more blood donors on this coming Saturday in Dolores Park. They both think it is a great idea. They click on the "sign up now," and it automatically schedules an appointment using their Netflix account information. Soon after, they receive an email confirmation letter about the event details – including the primary donation process introduction, donation safety issue text, and a movie list.

On Saturday, they go to Dolores Park. Many people are enjoying their time donating blood and watching movies at the same time. After the donation, there is a discount applied to their Netflix as a donation reward.

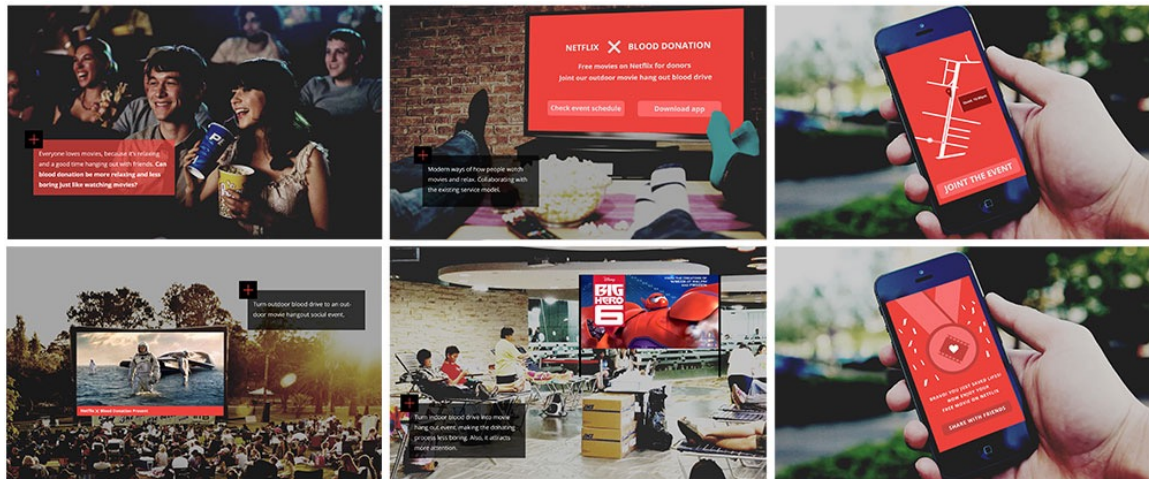


Figure 4.6: Storyboard-4

Chapter 5 –Design Strategy

5.1 THE ENGAGEMENT LOOP

The process of ideation helped me refining my understanding of the design goals. During the ideation evaluation stage, I identified three main factors that play vital roles in the engagement loop of the blood donation service model. They are smart service, life value, and influence (See Figure 5.1).

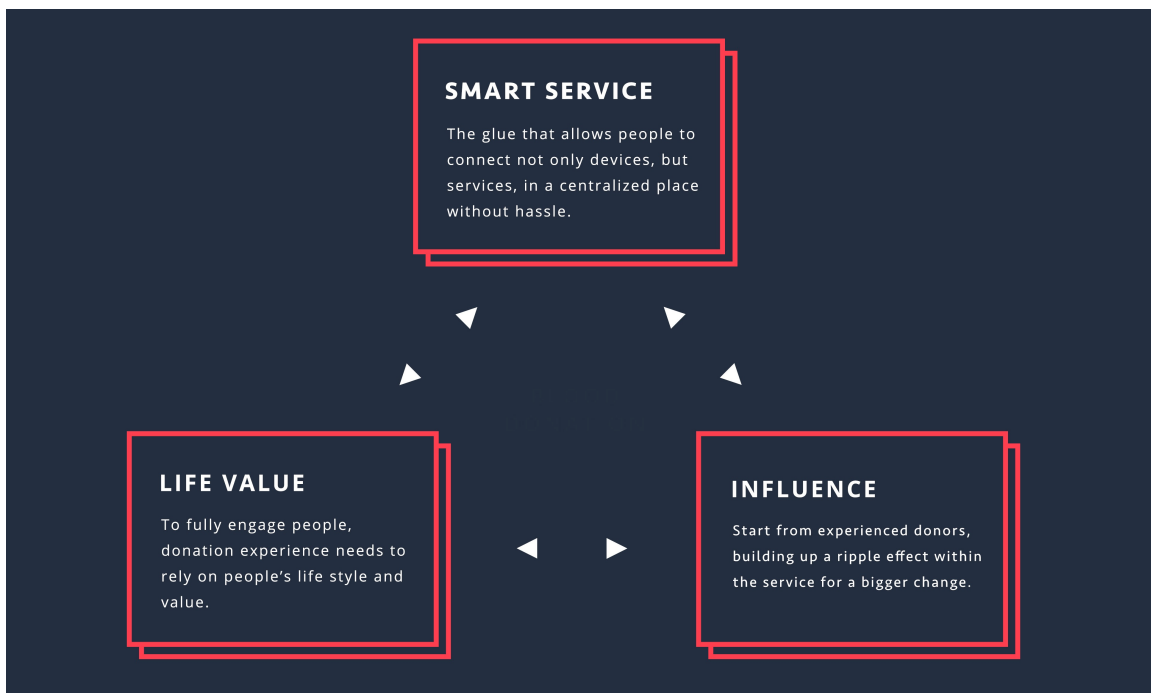


Figure 5.1: Engagement loop

Smart service: Looking forward to the digital age

Fjord (ANNUAL TRENDS – Accenture, 2014) reported that smartphones and other mobile technologies are finally maturing. It is time to view technology as the driver for market disruption. The increased public adoption of technology from teenagers to adults presents an unprecedented opportunity for companies to deliver new types of experiences. Telecommunication can reshape the service industry by combining traditional network services with new digital hubs. It allows users to

connect not only to devices, but also to people. It provides a service model smart enough to detect user needs before their requests and guide them through the process without hassle.

While one thing important to notice is that it's not the technology itself alone that makes the service satisfactory and drives customer loyalty. Rather, it's the way in which those services adopt technology as a driven force to craft the user experience that makes it successful. For example, booking taxis on a mobile phone is hardly a groundbreaking idea. The possibility has been there for years, and lots of people have thought about it or even carried out the idea into actions years ago. However, Uber used technology to provide a service people really want, and to disrupt an industry that has failed to serve its customers uniformly. Uber makes their business around transportation. However, Uber itself as a company has no cars and drivers at all. It uses mobile technology as a platform to connect people who could provide a ride with people who need a ride.

The blood donation service has been existed ever since 1941 when The Red Cross began the National Blood Donor Service to collect blood for the U.S. military. The donation process hasn't changed that much. The service itself still relies heavily on outdated communication channels, such as emails, phone calls, and posters to reach out to potential donors. It's time for a traditional service like blood donation to adopt technology and revamp the experience of giving blood. The service model should be built upon telecommunication. It needs to utilize its influence via social media channels, reaching people through the interaction channel they like and are comfortable with.

Influence from others

Based on the secondary research, influence from friends and families is the number one self-reported reason that people decide to give blood for the first time. The feedback gathered from contextual interviews further confirms the theory that

influence plays a vital role in people's mindset of giving blood. Therefore, "influence" was decided upon as a priority in my design.

Influencing others can be a rewarding feeling for experienced donors, and at the same time an effective motivator for non-donors. "Word-of-mouth" is one of the most effective marketing strategies. Many people started giving blood because of the positive shared experience of their friends and families. The goal for my project is to start with experienced donors and encourage them to influence their friends and families.

Align with user's life value

An excellent service should seamlessly integrate into a user's daily activities. It should also help users to go beyond their boundaries to fulfill their latent needs and potential. It's about just-in-time support, care, and connection.

In recent years, the roles of service provider and service receiver have been changing. Users are invited to become co-creators, and generate their own content. Companies are relinquishing their control for the first time. They start to craft better service experience by offering more personalization and transparency. They find out what their customers believed in and interested at, what platforms customers have already adopted, and then build the service upon them. In all, services nowadays need to react more nimbly to users' needs, infusing empathy into every interaction.

5.2 SERVICE BLUEPRINT

After research and ideation, the design objective became pairing digital communication overall with bigger service goals. The significant service goal is to improve the general experience of existing donors. At the same time, it should emphasize the idea of experience sharing, encouraging people who have donated before to share their donation experience and influence more people around them to give blood.

A service blueprint was illustrated to specify the touch points, the role of the service provider, and backstage operations in the service model, It visually articulates how the new service system works, and also helps in prioritizing content in the later design stage (see Figure 5.2).

Service blueprints are a way to specify and detail each individual aspect of a service. This usually involves creating a visual schematic incorporating the perspectives of both the user, the service provider and other relevant parties that may be involved, detailing everything from the point of customer contact to behind-the-scenes processes. Service blueprints are able to show the processes that lie behind the critical service elements around which user experience is defined.

– Stickdorn and Schneider. *This is Service Design Thinking*. 2011

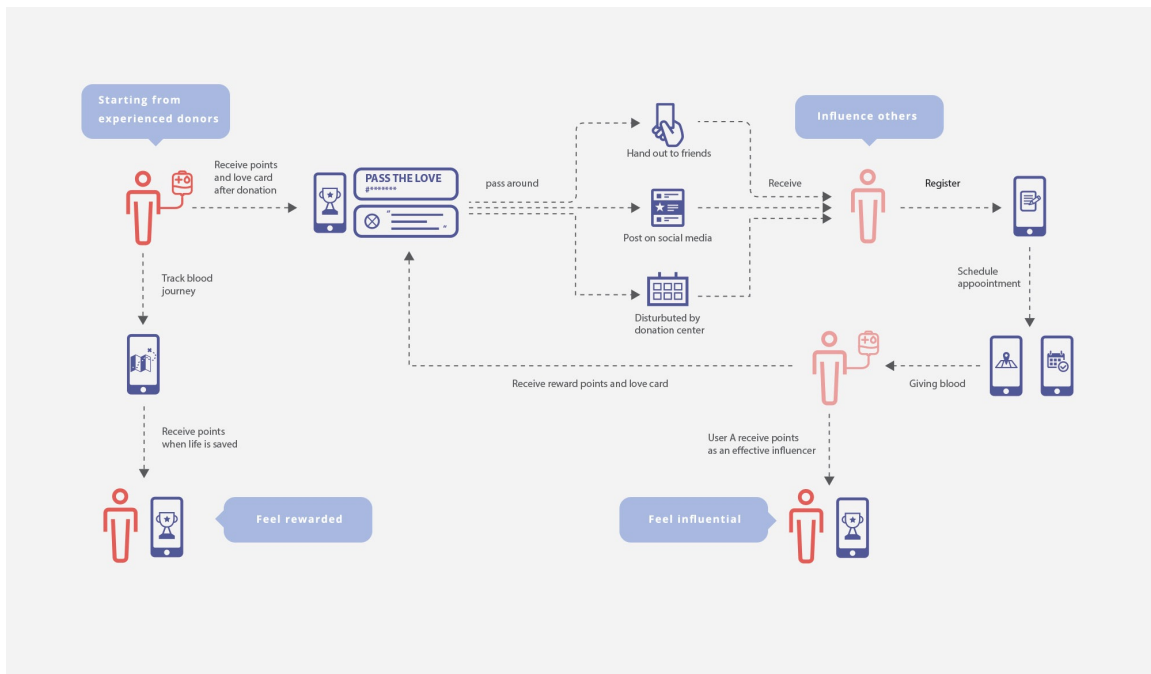


Figure 5.2: Service blueprint of the new donation service system

Chapter 6 – USER EXPERIENCE DESIGN

User experience design encompasses the design of all aspects of a service that impacts a user of a product, system, or device. In the technology market sector, user experience mainly comes from digital product experience, like desktop computers, mobile applications, and wearable devices. Various aspects can influence how the experience would be in the context of technology, namely the interface, graphics, design, physical interaction, and even the help system. In my project, the user experience will be designed from three main aspects: information architecture, visual design, and interaction design.

6.1 CONTENT ANALYSIS OF THE CURRENT WEBSITE AND MOBILE APPLICATION

To build an application for a blood donation service is very different from creating an application that features entirely new concepts. It's more about crafting a better experience based on established ones. The blood donation service process includes many medical issues and regulations that have to be taken into consideration and couldn't be changed. Therefore, I aim to use as much existing site structures and markups as possible so that I could focus on going deeper and better—not redoing existing work. The goal is to build up a more user-centered design by combining the existing structure and content together with the new service system I generated from both primary and secondary research (see Figure 6.1).



The structure of the current application is very much linear. The profile page serves as the connecting hub in the application. From here, users can access to ‘Schedule appointment’, ‘Donation history’, ‘Your red cell blood journey’, ‘About donating blood’, ‘Capture the moment’, and ‘Blood survey’. It also features ‘Profile’, ‘Rewards’, and ‘Impact’ in the bottom tab (see Figure 6.2).

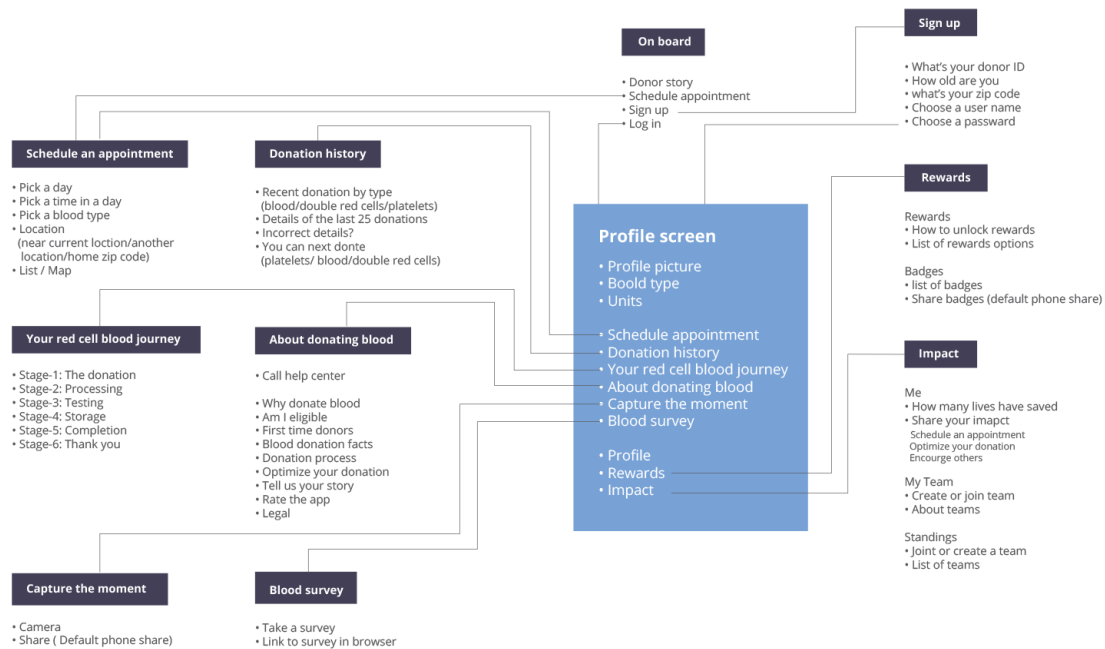


Figure 6.2: Content map of the existing blood donation application

6.2 INFORMATION ARCHITECTURE

After performing the content analysis of the current blood donation application, enough essential information was gathered to build up the foundation of the service system. It included the schedule process and the blood donation education. The next step was to combine the regulated information together with the new service model. During this stage, the most important thing was to structure an easy-to-understand information architecture.

The design process used many methodologies from the book “How to make sense of any mess” by Abby Covert (2014). In the book, the author wrote: in order to determine who and what matters, ask these questions:

- Who's most important to get agreement from?

- Who's most important to serve?
- What words might make them defensive?
- What words might put them at ease?
- How open are they to change?
- How will this affect their lives?
- How does the current state of things look to them?
- Is that good or bad?

The biggest issue in the design of the on-boarding experience was identifying user scenarios. Different users have different knowledge levels when they first encounter the application. Therefore, the information offered by the application should change accordingly. In the end, the opening structure was designed slightly differently based on four user groups.

User case-1: Regular donors

1. Check on status (Rewards, Influence, Journey)
2. Make appointment

User case-2: Previous donors who stopped donating

1. Reconnect the relationship (Check previous history)
2. Make appointment

User case-3: People who want to donate but do not have the proper opportunity to do so

1. Donation walkthrough (Preparation)
2. Fill out personal info (Profile, Survey)

User case-4: People who are physically unable to donate blood

"If I can't actually give blood, how can I help in other ways?"

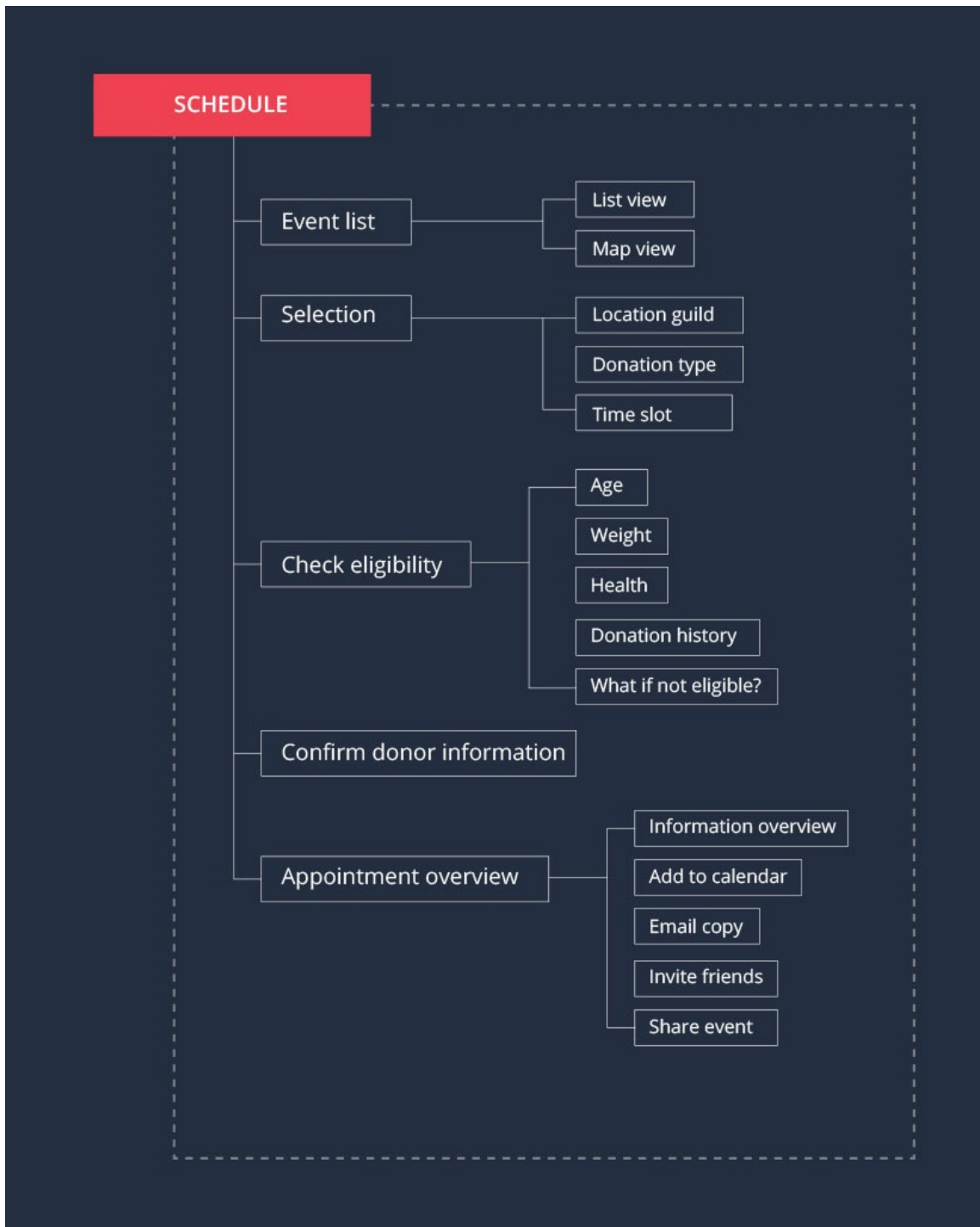


Figure 6.3: Schedule a donation

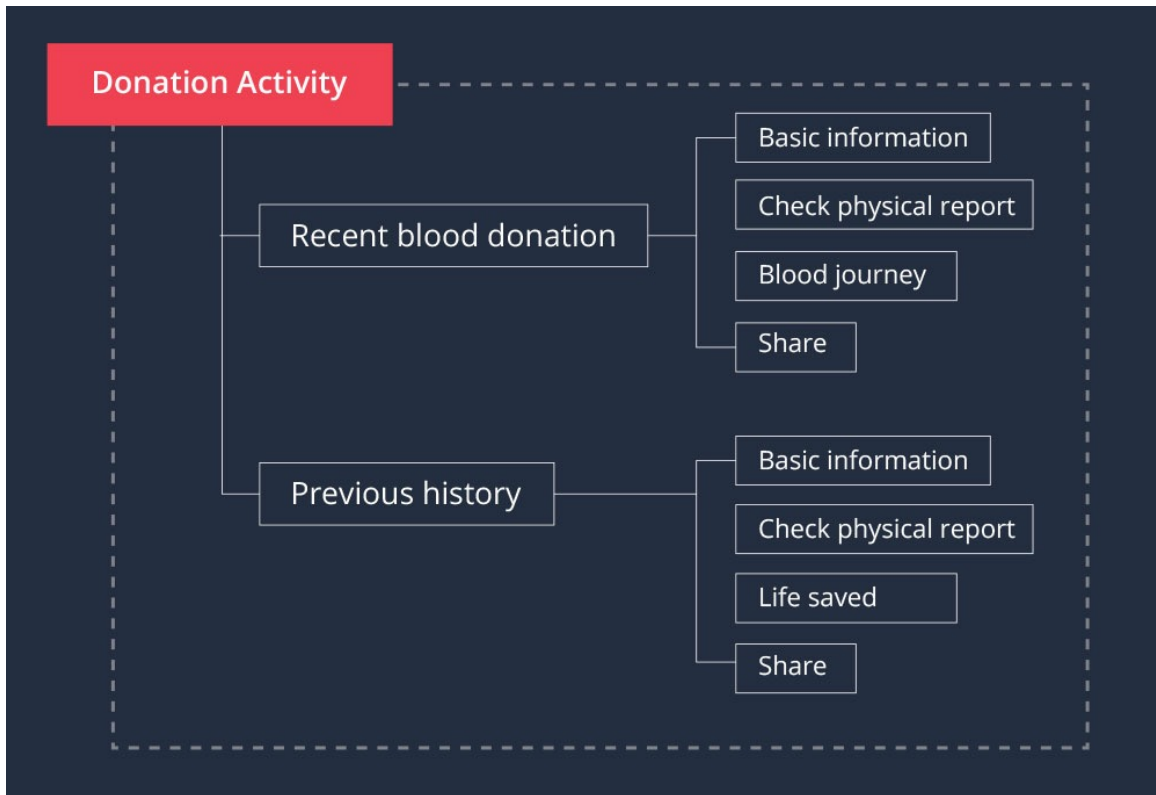


Figure 6.4: Donor activity



Figure 6.5: Donor community



Figure 6.6: Prepare your donation

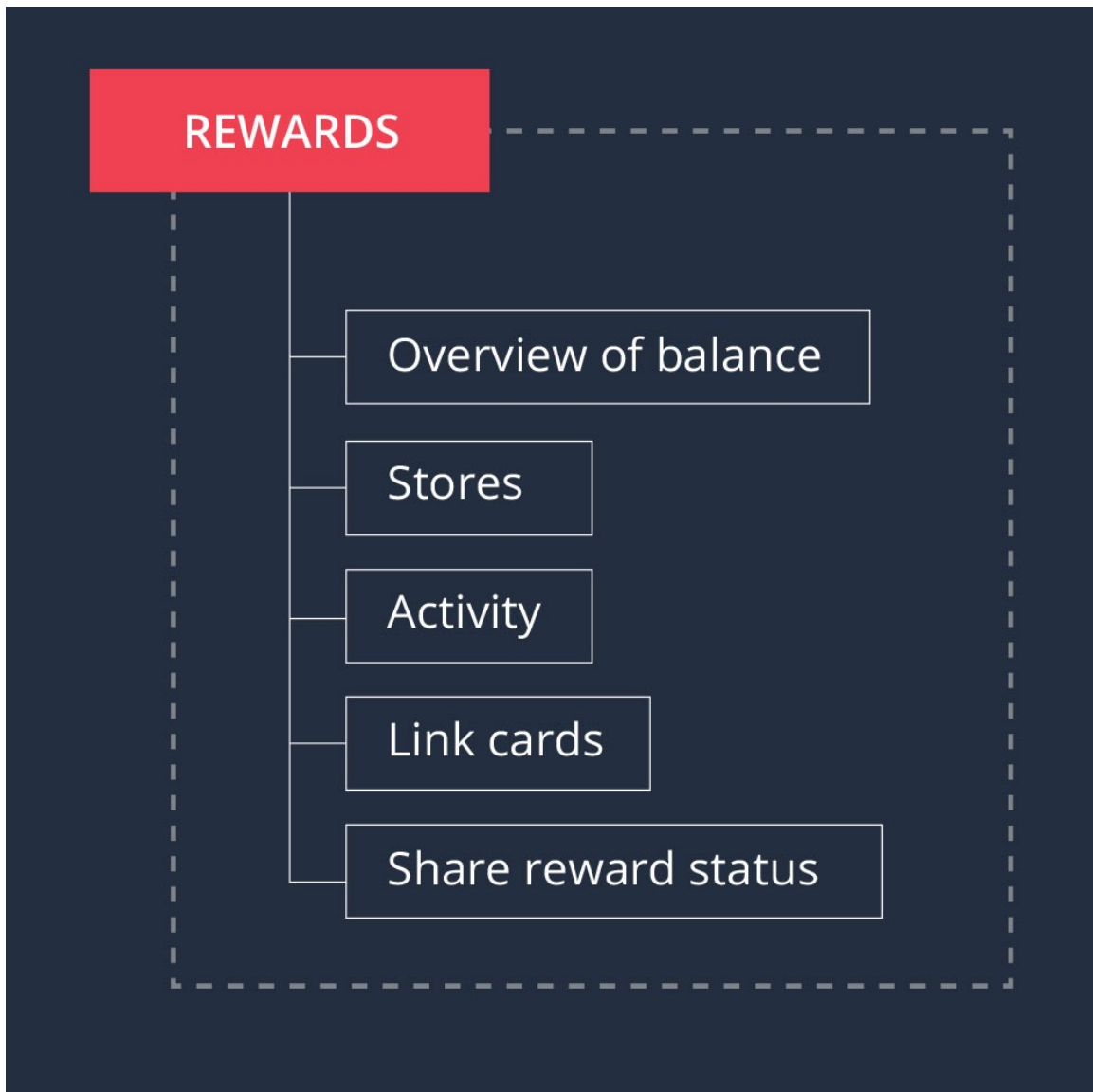


Figure 6.7: Rewards

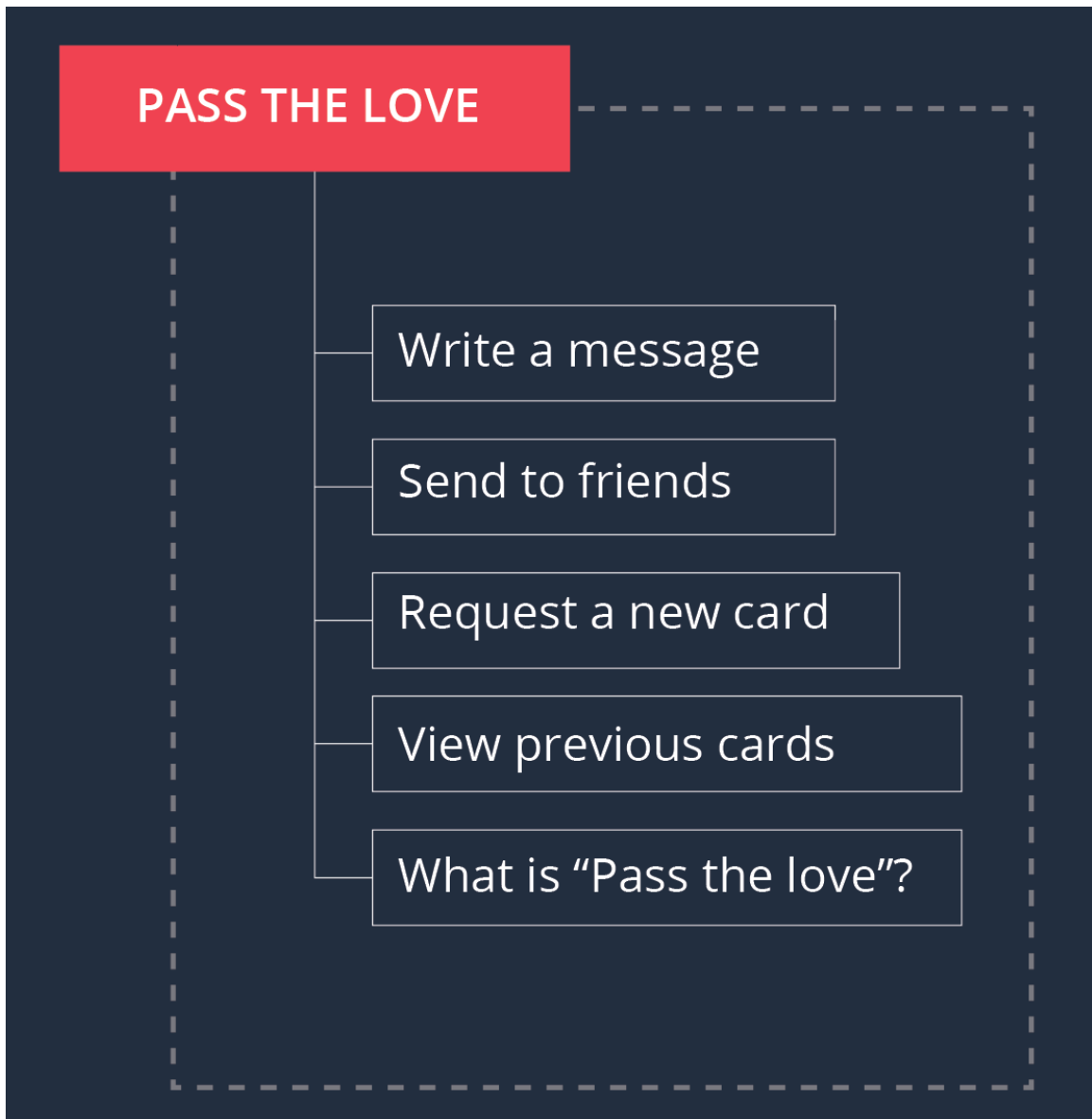


Figure 6.8: Pass the love

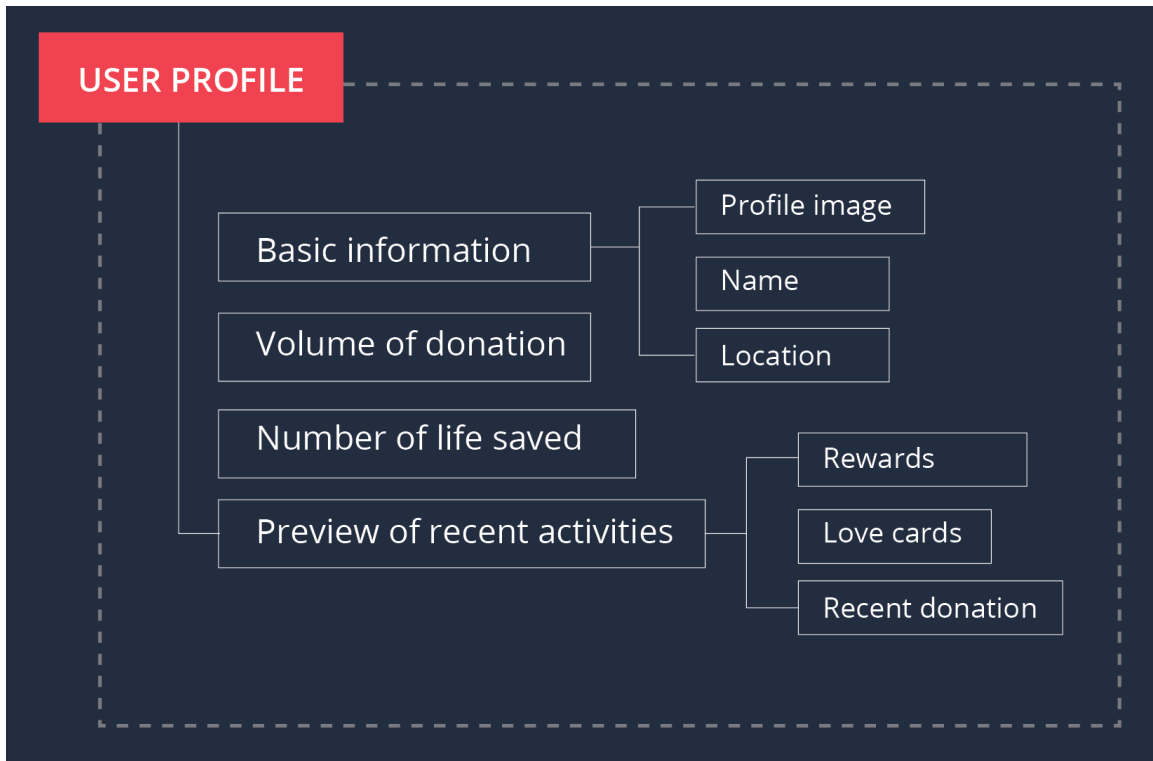


Figure 6.9: User profile

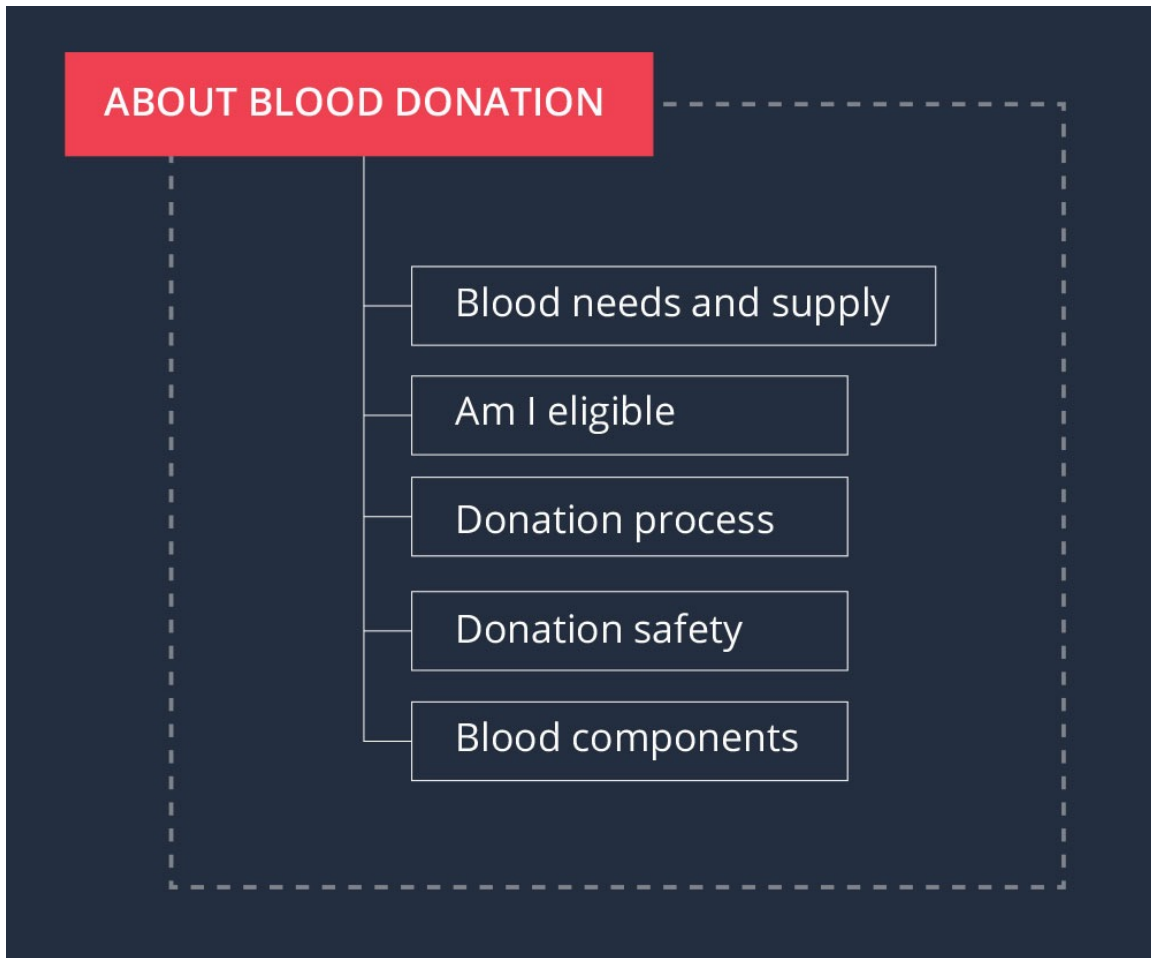


Figure 6.10: About blood donation

6.3 EARLY SKETCHES OF WIREFRAME

Lots of sketches were used in the wireframing stage. From early ones with only boxes and lines all the way to more detailed sketches using icons and graphics. The sketch is the best way to explore variations in the early wireframe development stage. Several iterations were made by self-evaluation, using the designer as a potential user to walk through the process (see Figure 6.11).

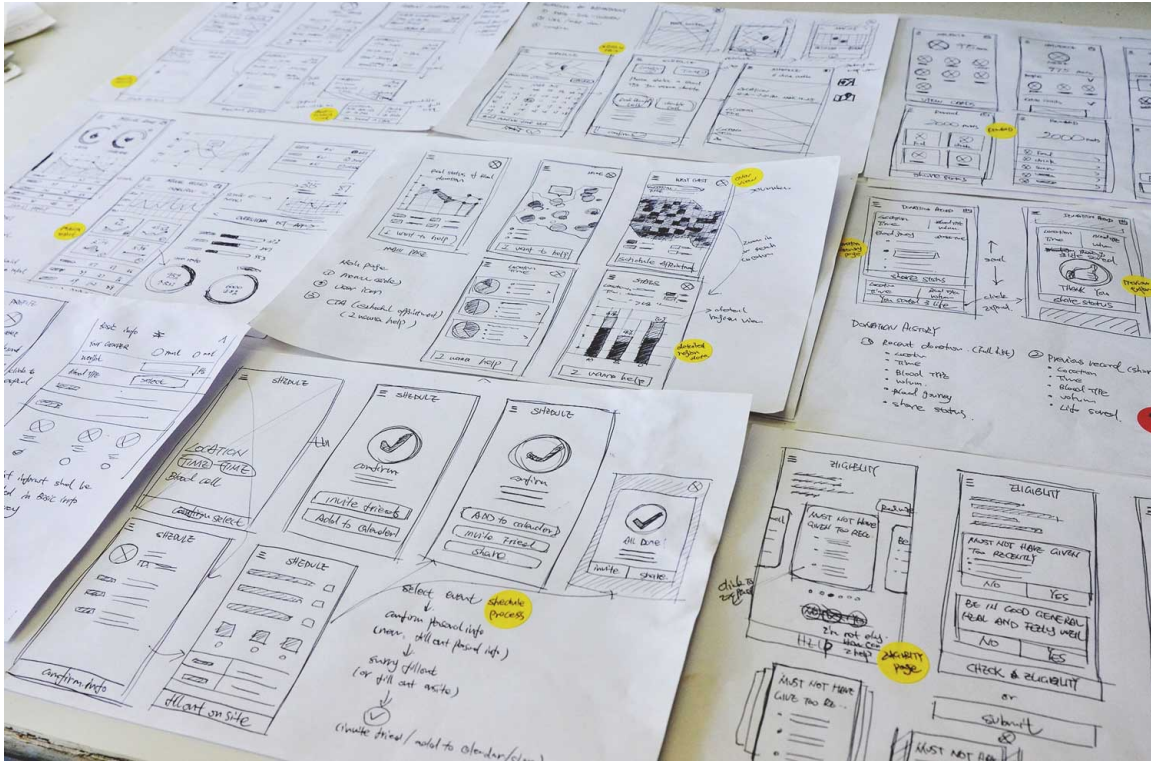


Figure 6.11: Sketches of wireframe at early design stage

6.4 LOW FIDELITY PROTOTYPE

Prototypes are widely recognized to be a core means of exploring and expressing designs for interactive computer artifacts. It is common practice to build prototypes in order to represent the different status of an evolving design, and most importantly to explore options.

To create a clickable low-fidelity prototype, the wireframes were converted to digital versions to be linked in Invision (an app that live prototypes apps). (See Figure 6.12). The low fidelity prototype was tested with classmates, experienced donors, potential donors, and also people who work in the blood donation industry. During this stage, the goal was to test out my design hypothesis.

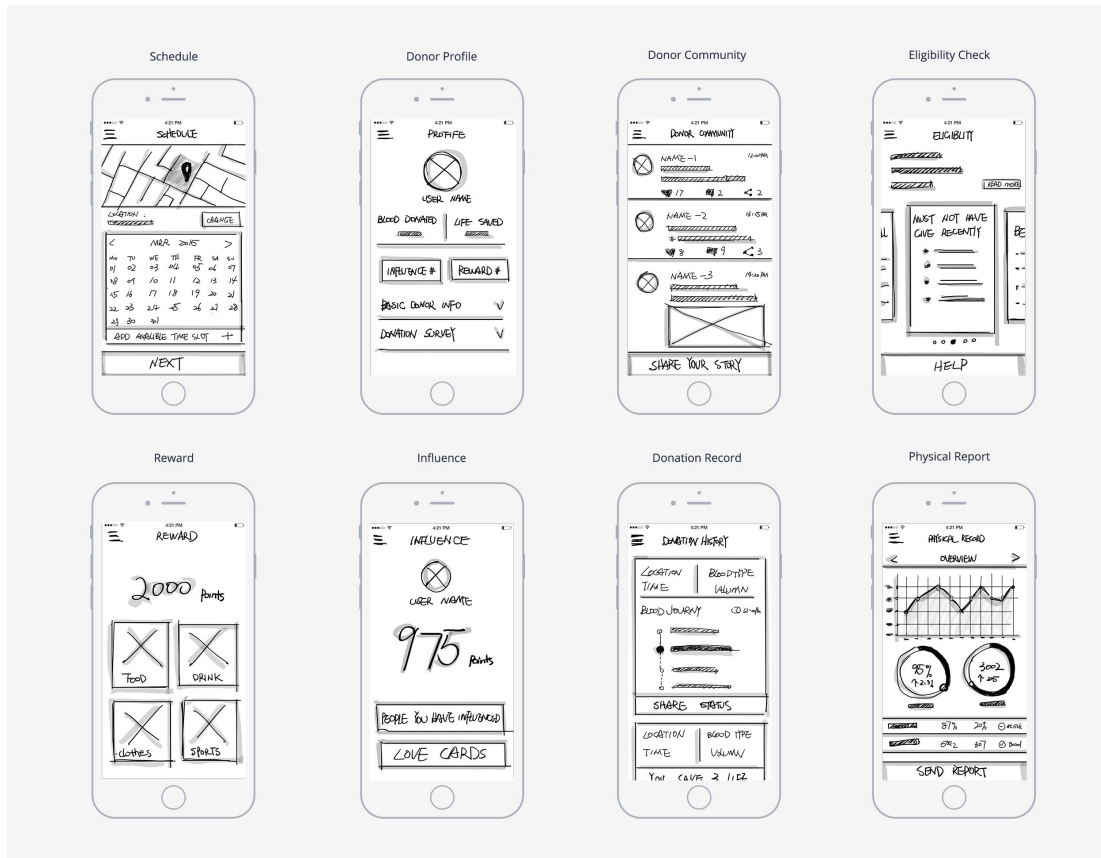


Figure 6.12: Early wireframes

118 usability responses were gathered from the prototypes and helped iterate four further rounds of more prototypes (see Figure 6.13). The conclusion of the feedbacks were:

1. The onboarding experience for different types of users should be different.
2. Clear separation of the reward card and influence card.
3. Provide explanation of how the reward card and influence card can be used.
4. Simplify the process to schedule a donation. Four steps should be the maximum.
5. Too wordy in the 'About blood donation' section, more graphics would be preferred!
6. Physical reports can be too professional for normal users to understand.



Figure 6.13: Early wireframes done in Invision

6.5 VISUAL BRANDING

Visual design is an inseparable aspect of user experience design. It is especially significant for this project since a big barrier of blood donation is the negative impression about the donating process. I tried to avoid the cold hospital aesthetic and the scary image of bloody needles as much as I could during the design phase. The mood board I created via Pinterest contained inspiring and creative branding works from other designers, which helped to define the look and feel of the my design (see Figure 6.14).

One of the very challenging parts of the visual design was to find the right color palette. Red should be the right color to indicate blood donation, but it could also be quite scary. The goal of the visual design is to be visually fun and light, but still with

some level of seriousness since it needs to be trustworthy for the medical aspect it embodies.

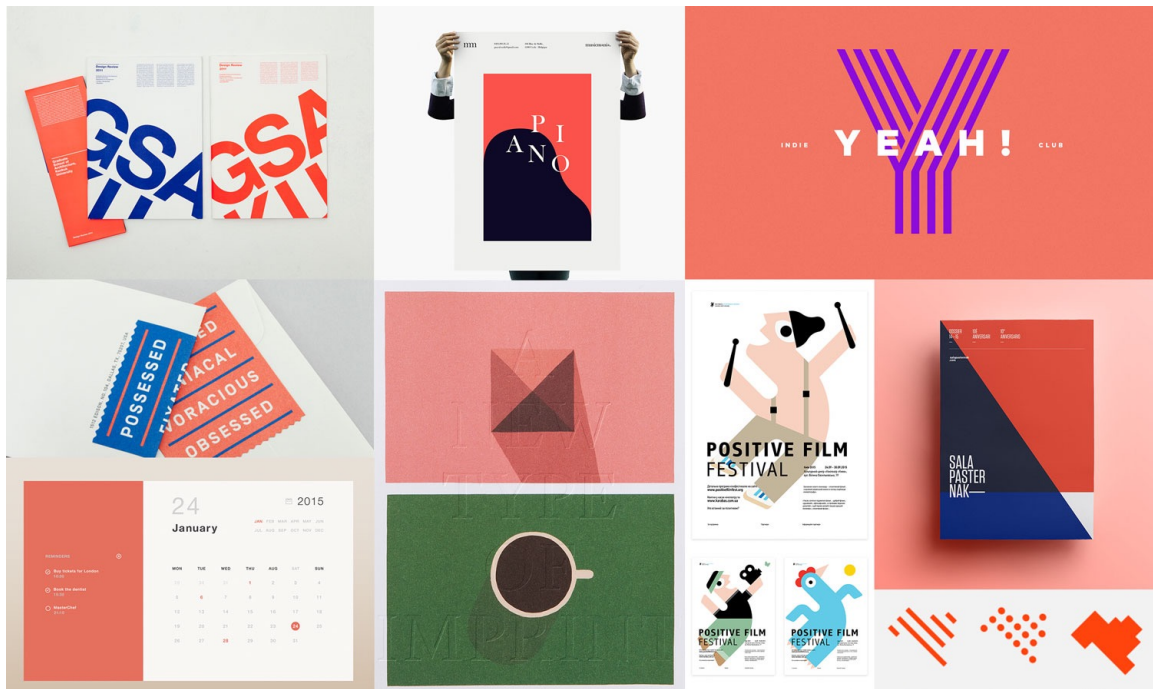


Figure 6.14: Visual branding mood board

Chapter 7 – Design Outcome

Title: Alms

Brief: After rounds of reviews and design iterations, the final design outcome is an application that assists donors throughout the entire donation process by increasing the information accessibility and donation opportunities. The donor reward card system included in the service encourages repeat donors to share their experience. The overall idea is to pass on the love and influence more people to help.

Opening

- Sign up: for first-time users who have not donated before nor have received any donor card.
- Login: for users who have registered the application already
- Connect with donor reward cards: for users who have donated before or users who have received donor card from a friend.

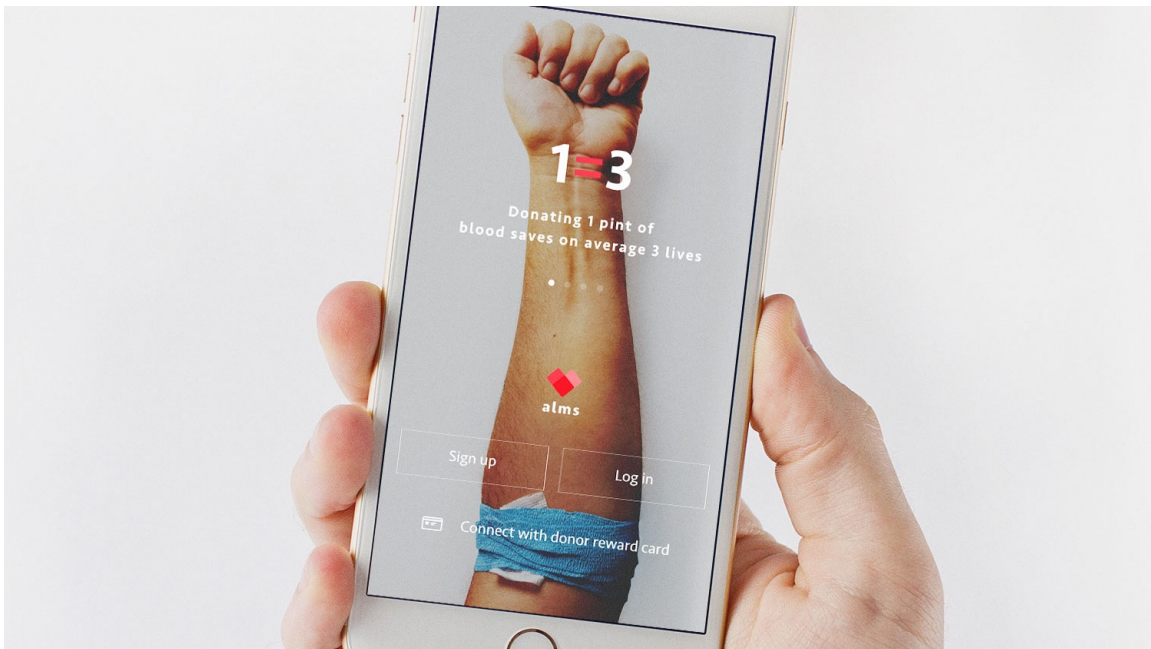


Figure 7.1: Opening of the application

The image shows a mobile application interface for a sign-up process. At the top, there is a status bar with signal strength, Wi-Fi, and battery icons, and the time 4:21 PM. Below the status bar is a navigation bar with a back arrow and the title "Input Information". The form consists of several input fields, each with a red vertical line on the left side. The fields are: First Name, Last Name, Official ID, Email, and Password. Below these fields are two sections: "Gender" with buttons for "Female" and "Male", and "Date of birth" with input fields for "mm", "dd", and "yyyy". At the bottom of the form is a large grey button labeled "Next".

Sign up

When users click on “Sign up”, the next step is to fill out some basic personal information like name, official ID, email address, date of birth, and a password.

When the information is filled out, new users will receive a new donor reward card in the next step to start their donation journey right away.

Figure 7.2: Sign up

The image shows a mobile application interface for entering a donor ID. At the top, there is a status bar with signal strength, time (4:21 PM), and battery level. Below this is a navigation bar with a back arrow and the title 'Input Donor ID'. The main content area has a heading 'Donor Identification Number' followed by a text input field with a red vertical line on the left. Below the input field is a paragraph of explanatory text. At the bottom of the main area is a link that says 'Forgot or lost your Donor ID ?'. A grey bar at the very bottom contains the word 'Next'.

Input Donor ID

Donor Identification Number

It is the number located on the front side of your Rewards Card, the card you were given after your first donation or you received from others.

[Forgot or lost your Donor ID ?](#)

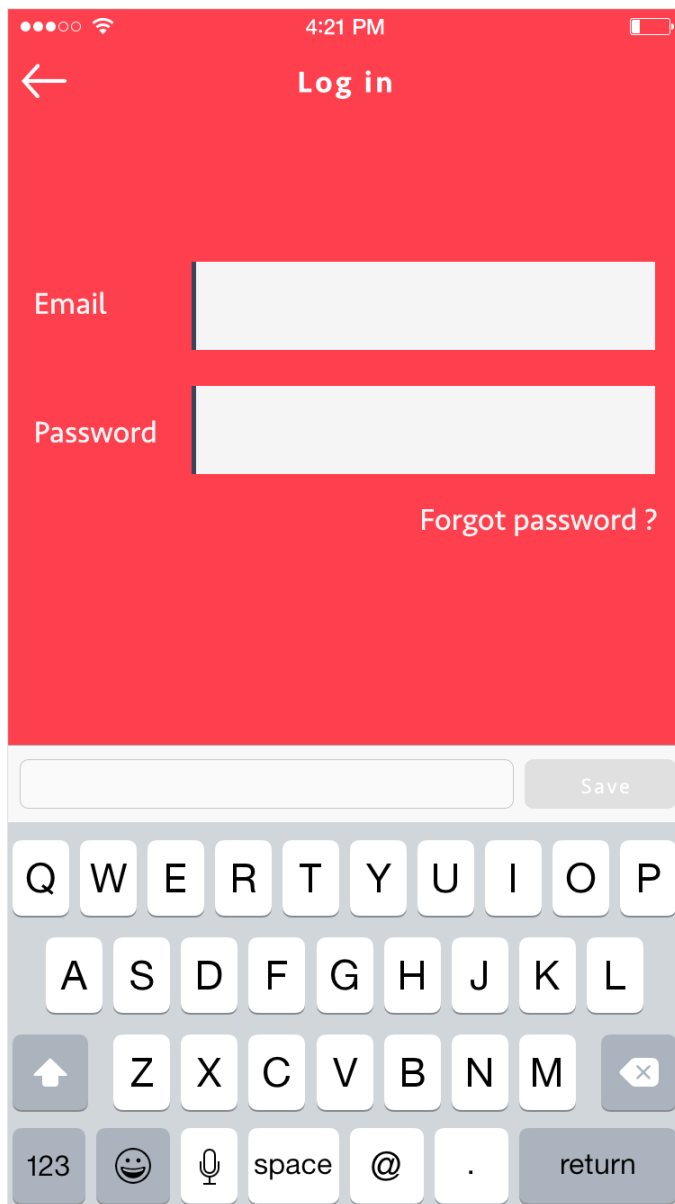
Next

Connecting with donor reward card

For experienced donors, they can input the donor identification number that is located on their donor reward card.

For new donors who have received a new donor reward card from another friend (by email, message, or social media platform), they can register by connecting with the new card. It will automatically fill in their personal information.

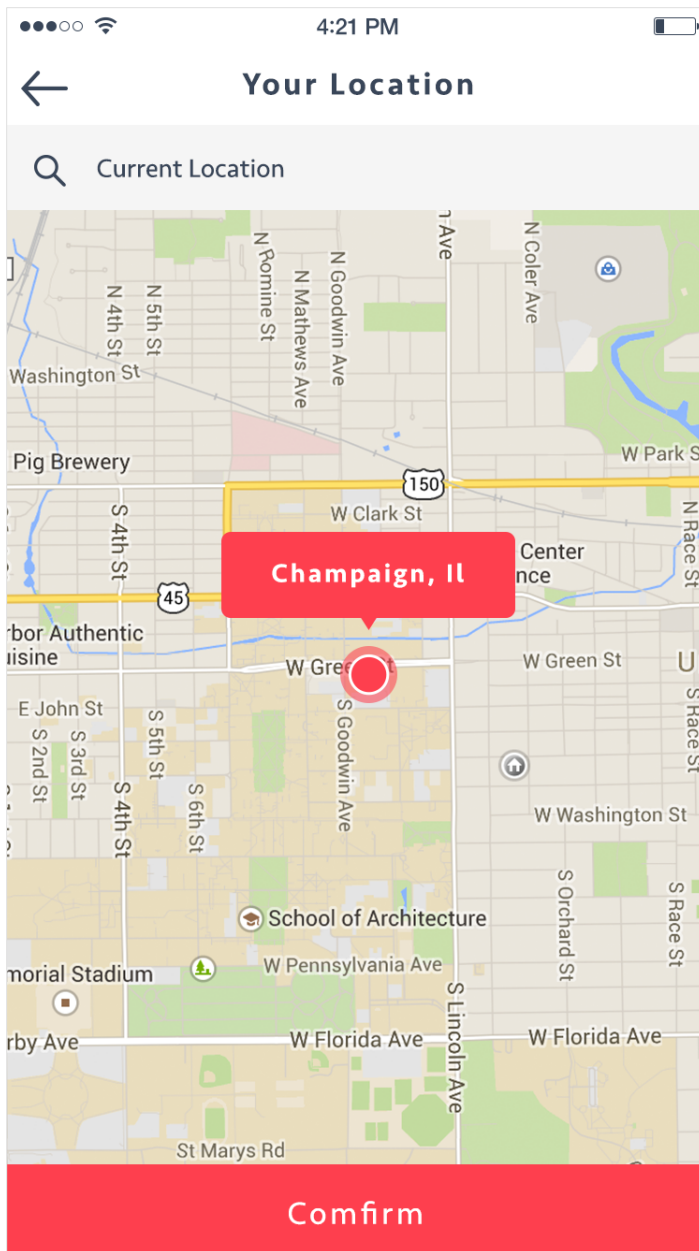
Figure 7.3: Sign up with donor ID



Login

Users who have already registered can access the application by clicking on “Login” on the opening page. By typing in their email and password, they can log in to the application directly.

Figure 7.4: Login



Pin location

The application is location-based. It detects the user's current location the first time they open the application. If the location is correct, users can click on "Confirm," otherwise, users can search locations using the search bar on top.

Figure 7.5: Pin location

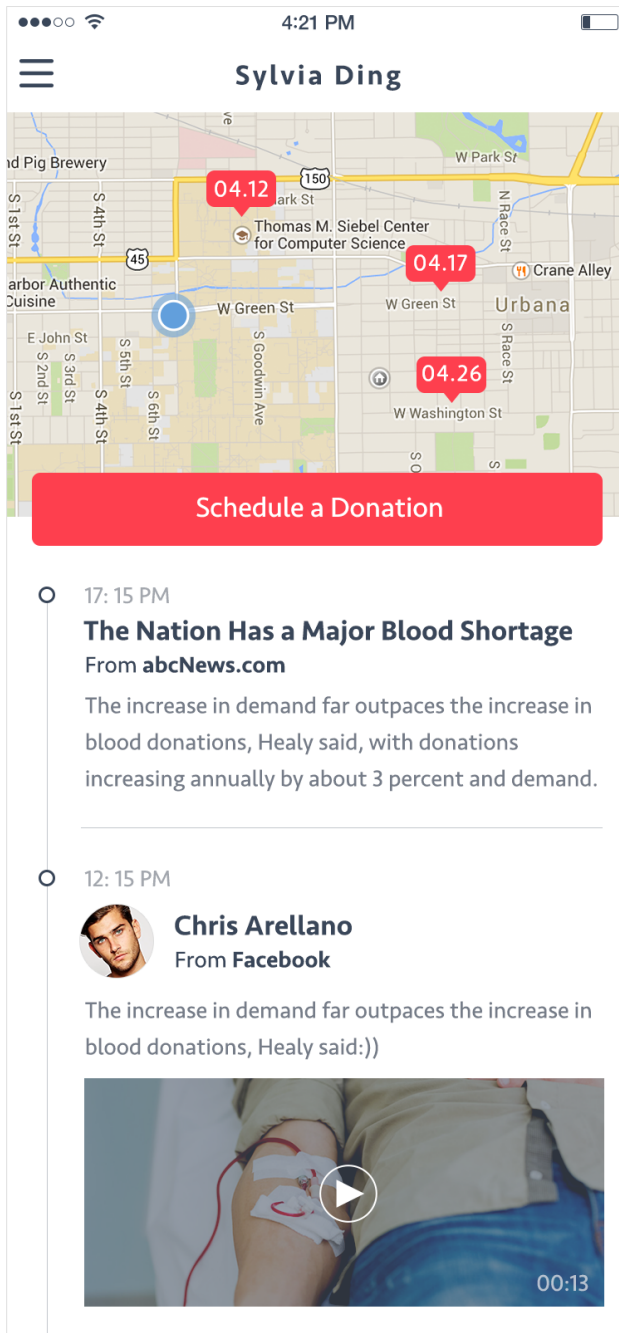
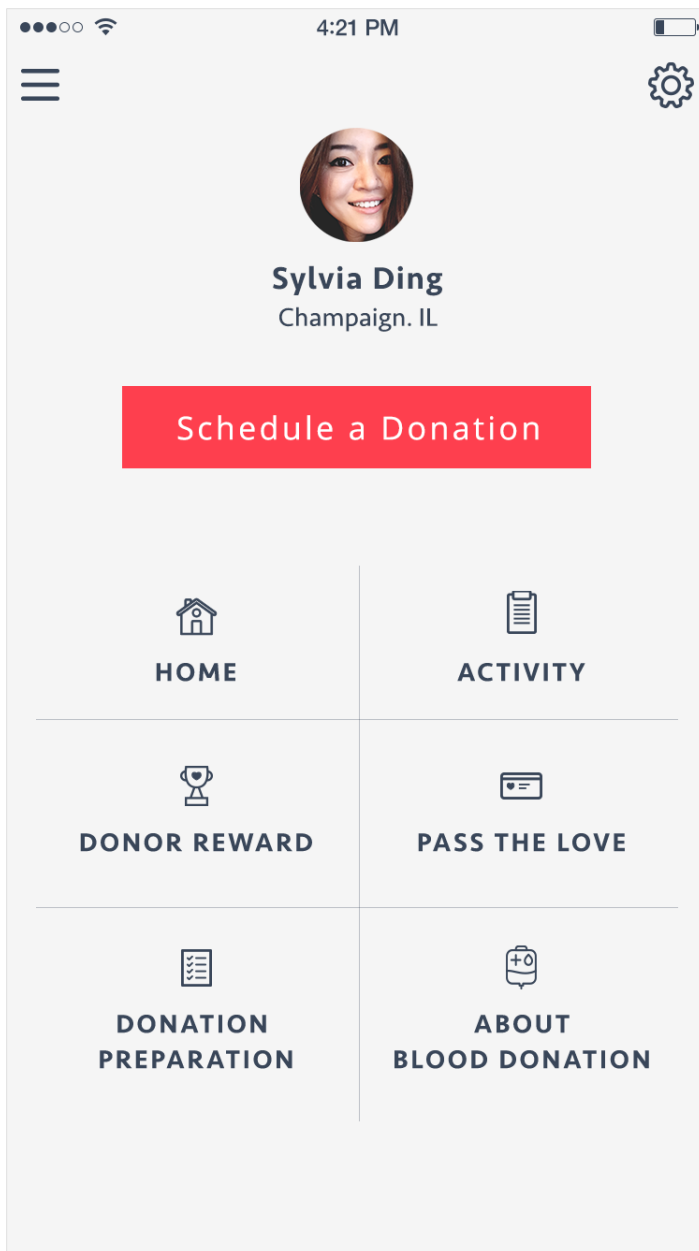


Figure 7.6: Main page

Main page

There are two sections on the main page. The upper section is a map showing the user's current location and nearby blood drives. The big red schedule button draws the most attention and is the primary feature here in the interface.

The lower section features news about blood donation that is collected from all different sources over the Internet. The user can also see their friends' feeds of donation activity here if they choose to connect the account with other social media in the "Settings" section.



Menu

Users can open the menu from the left side hamburger icon. In the menu, they can access other pages in the application – “Donation Activity”, “Donor Rewards”, “Pass the Love”, “Donation Preparation”, and “About Blood Donation”.

Users can also view their profile from touching their profile pictures. The setting is located on the left upper corner in the side menu.

Figure 7.7: Menu

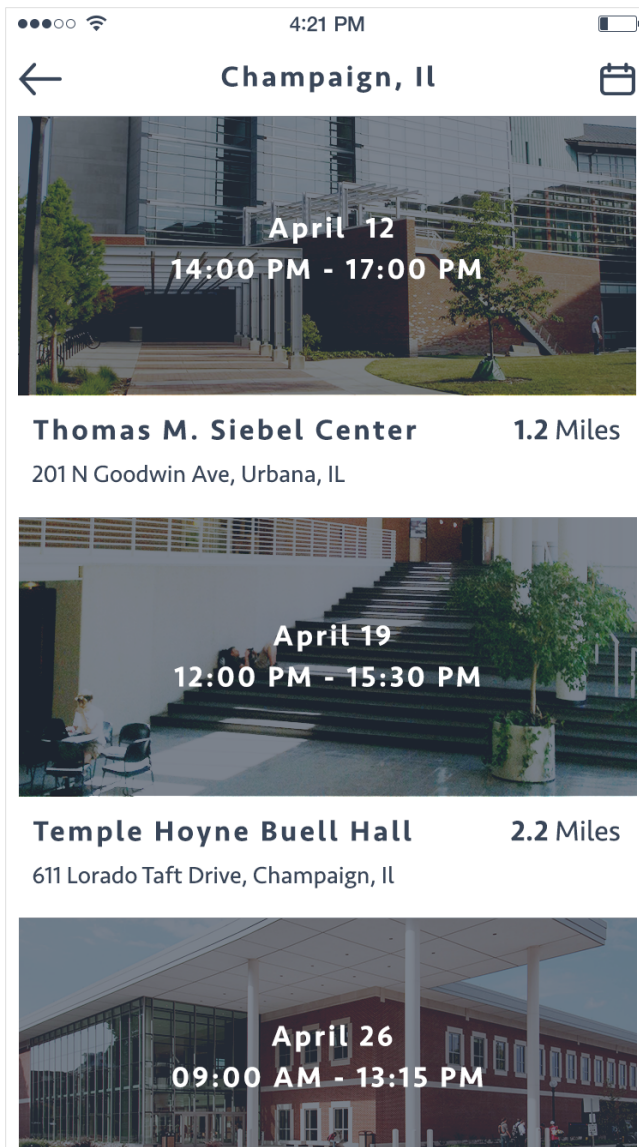


Figure 7.8: Event list based on location

Schedule

The application offers three different ways for users to select a donation event. By clicking on the red button “Schedule a Donation”, users will get a list view of donation events filtered by location. This list shows the nearest event on top, and farthest on the bottom.

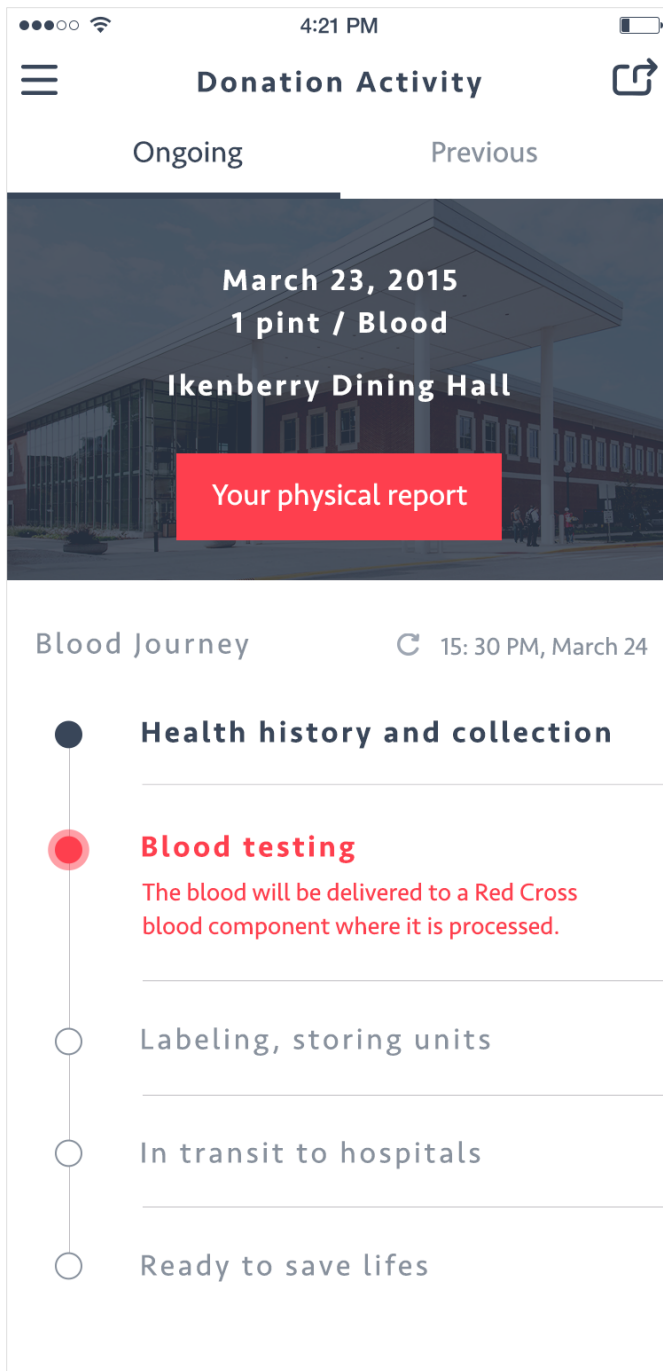
They can also switch to “View by time” by clicking on the calendar button located on the upper left corner. Also, users can view events directly from the map. When they tap on each location, a pop-out window will appear showing detailed information of the donation event.



Donation preparation

After one schedules an appointment, a user can get more information about how to prepare their donation via “Donation Preparation”. It is especially helpful for first-time donors. The preparation includes “Fill out survey ahead,” “Be healthy,” “Location guide,” and “Bring a friend.”

Figure 7.9: Donation preparation

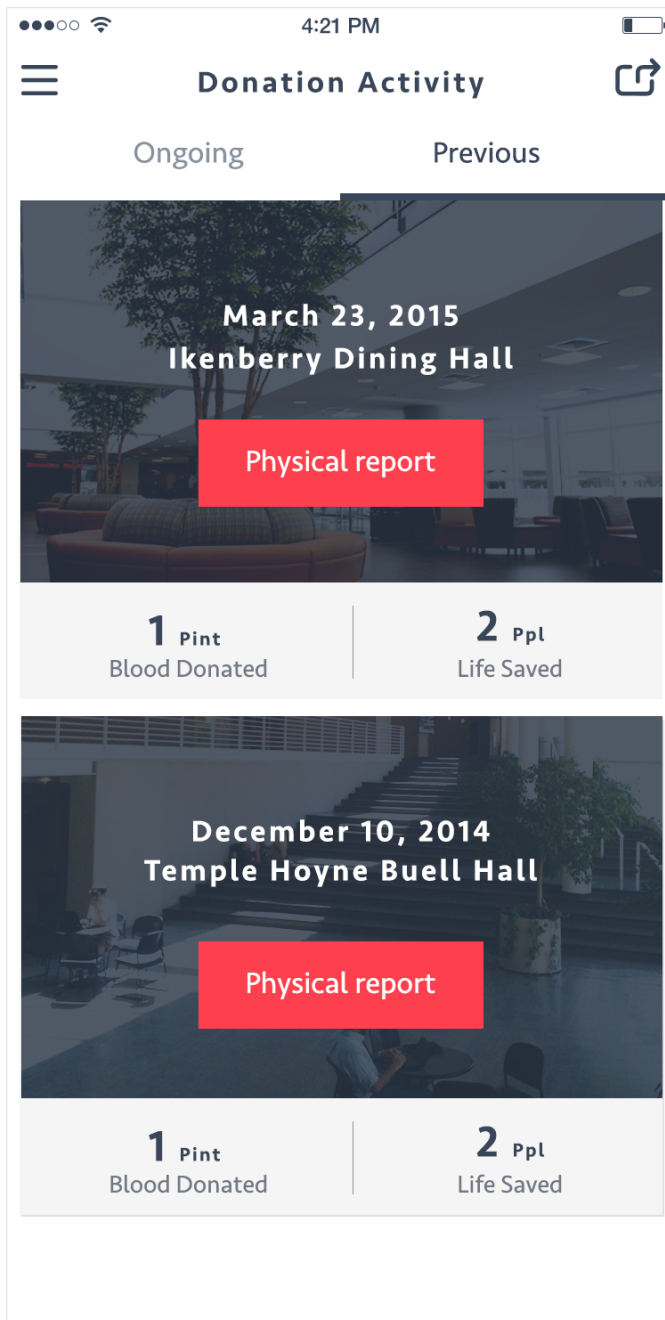


Donation activity - Ongoing

Donation activity is divided into two sections: "Ongoing" and "Previous." Users can switch between the two of them by the tap bar on the top. The 'Ongoing' shows information about the recent donation event.

Information includes time, location, donation type, and volume of donation. Users can also track their blood journey to see where their donated blood is, and whom they have saved.

Figure 7.10: Donation activity-Ongoing



Donation activity-Previous

The "Previous" is a list of donation record filtered by time. The report includes time, location, donation type, and volume of donation. Users can view more details about each event by swiping through the record list.

Figure 7.11: Donor activity-Previous

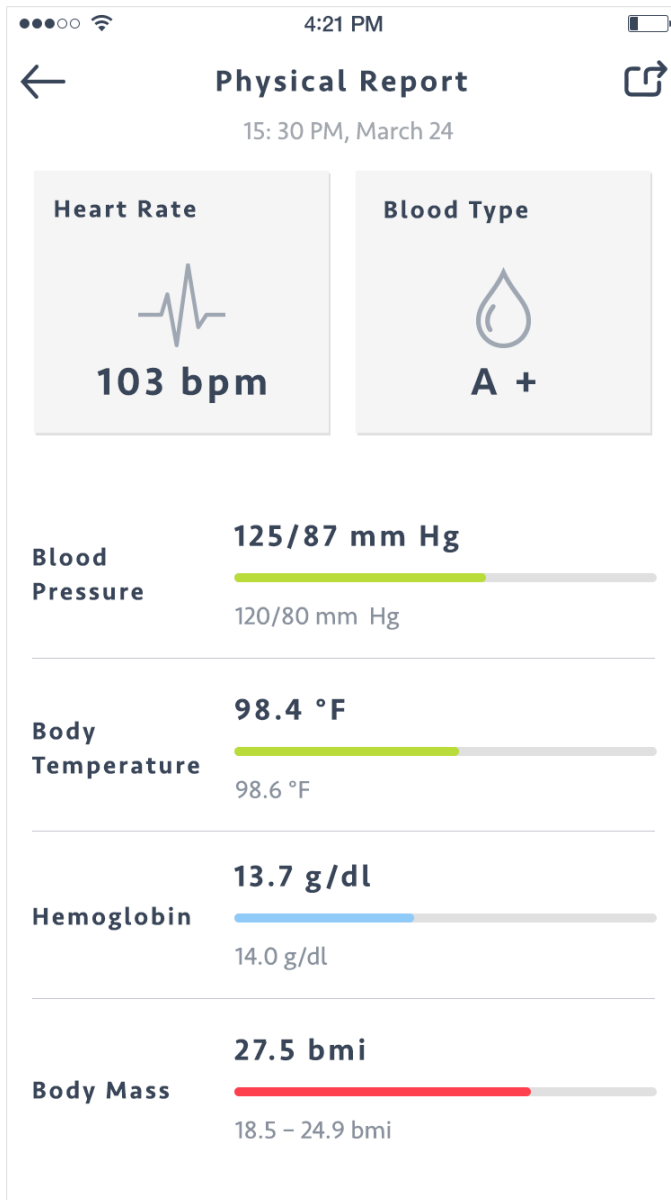
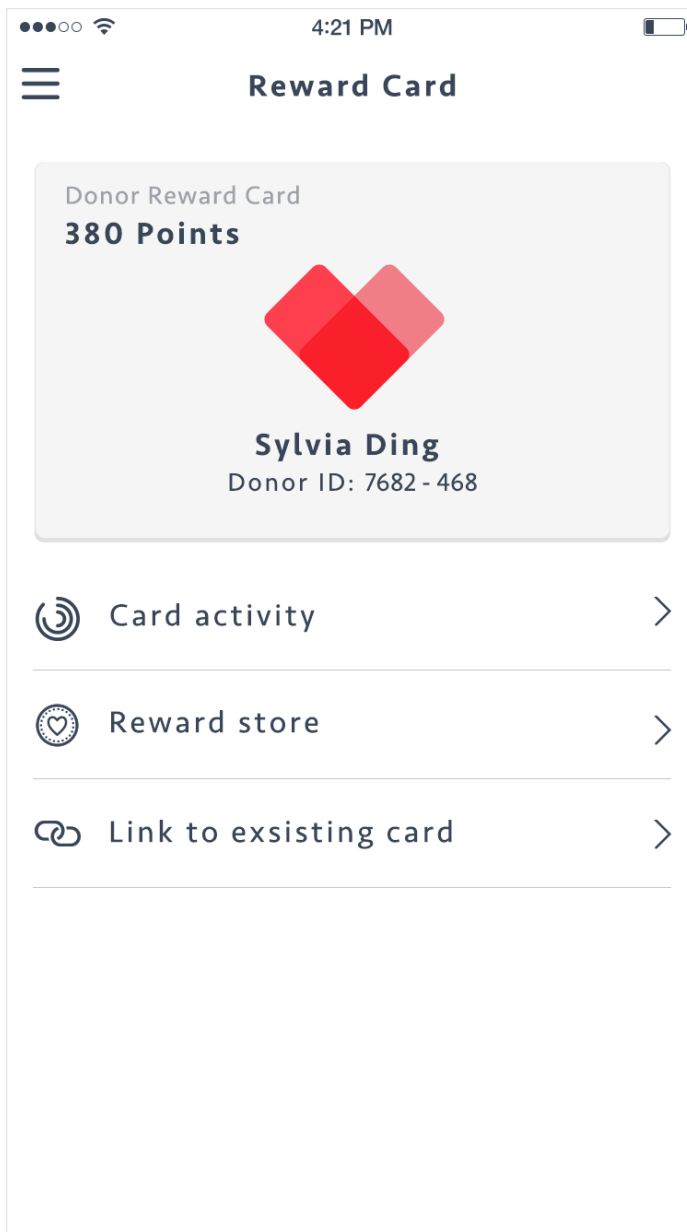


Figure 7.12: Physical report

Physical report

Blood donation is not just about helping others – it also benefits the donors. Before donation, blood donors will go through a mini-physical test to make sure they are physically healthy enough to donate blood. After the donation, the physical report will be generated and returned to donors via the mobile application.

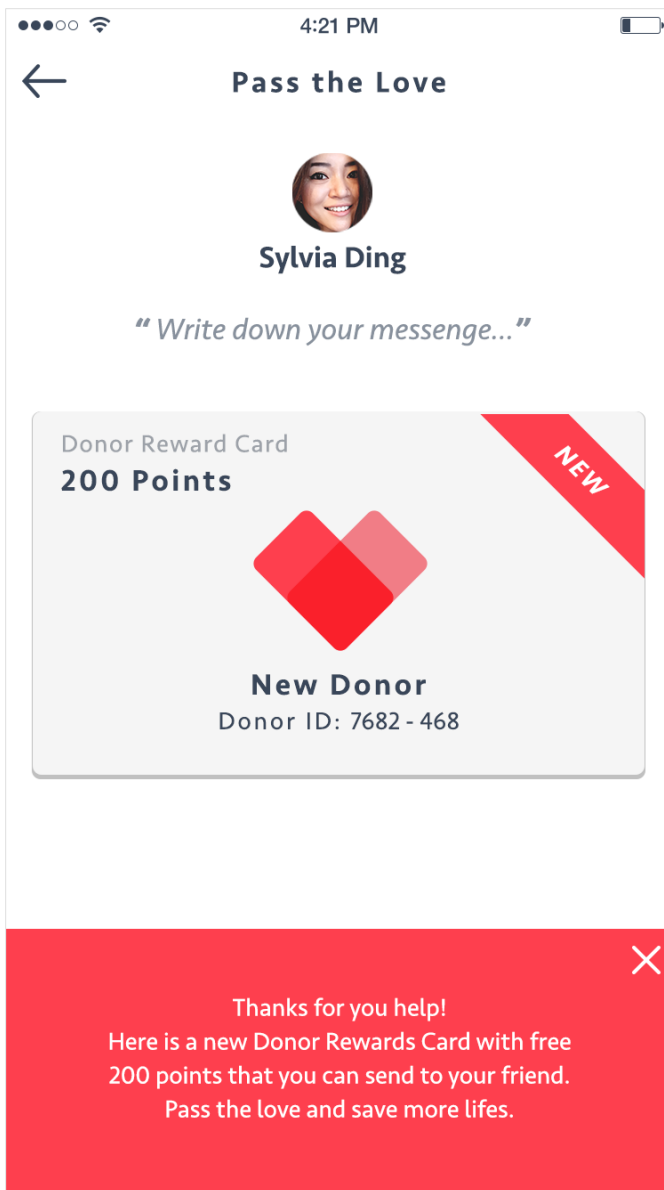
The report includes six types of health information: heart rate, blood type, body temperature, blood pressure, hemoglobin, and body mass.



Donor reward

“Donor reward” is where users can view their current reward status, by checking on how many points they have. Also, they can view their card activity and purchase history in the reward store from this section.

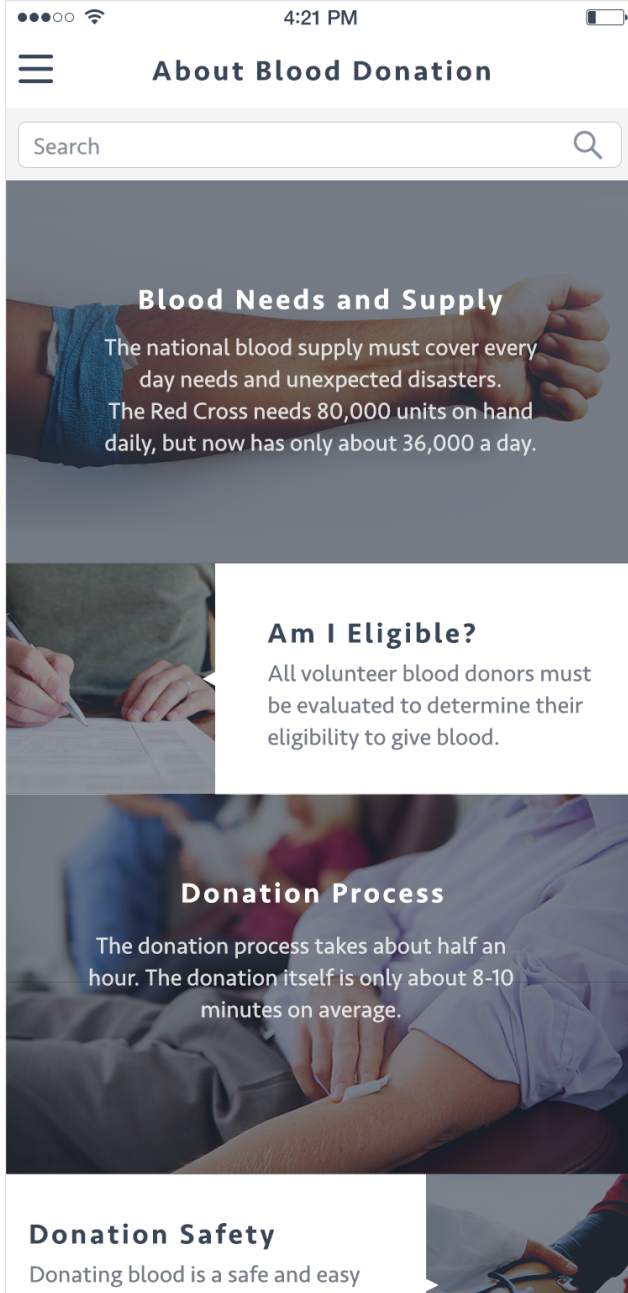
Figure 7.13: Donor rewards card



Pass the love

Each donor would receive an extra donor reward card with free 200 points after each donation. They could send the card to friends via text message, email, or any other social media platform. Before they send the card out, they can compose a personal message to their friend to share their experience. If the friend accepts the card, his or her donation activities would show up in the news feed of the senders. Also, every time the card receiver donates blood, the card sender would get 200 points as an influence reward.

Figure 7.14: Pass the love



About blood donation

Education is extremely important for increasing awareness, since many people are scared of blood donation because they are not knowledgeable of the actual donating process and important blood facts.

"About blood donation" is a section where users can get educated about basic knowledge of blood donation. Especially for first-time donors, knowing more about blood donation prepares them for a better experience.

Figure 7.15: About blood donation

Chapter 8 – Reflection

This thesis started from my personal knowledge about the severe shortage of a sustainable blood supply in the United States. By learning more about the current service model, I discovered that there is a significant design opportunity to improve this model. Blood donation needs to align with people's value to recruit more donors. Current technologies influence people's lives from various aspects. It shapes our society, influences our beliefs, and changes our behaviors. The increasing use of smartphones and other mobile technologies is also affecting the lives of people across different ages and demographics. Therefore, we have different expectations towards services we use. We expect them to be smarter, to understand our needs, to support us, and help us explore more.

In the initial research stage, the main goal was to gain understanding of the current blood donation service model; how it works, what's the recruiting process, and what motivates people to give blood. In order to deeply understand the blood donation experience to a high degree of detail, including donor's feelings and struggles, design ethnography research was conducted to gain empathy from donors on site.

After rounds of ideation and storyboarding, the final design features a system that pairs digital communication with a broader service objective. The primary focus is donor's feelings and struggles, design to start from experienced donors and empower them to motivate more people to help others by giving blood.

As another future plan, it is critical to test the design in the field and measure the possibility of system integration with the current donation service model.

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